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VOL. XXI.—1906.

THE
JOURNAL OF LARYNGOLOGY
RHINOLOGY, AND OTOTOLOGY;

AN ANALYTICAL RECORD OF CURRENT LITERATURE

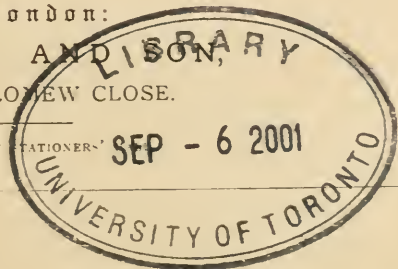
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THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

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EDITORS :

JOHN MACINTYRE, M.B., M.Ch., F.R.S.E.
DUNDAS GRANT, M.A., M.D., F.R.C.S.Eng.
ARTHUR SANDFORD, M.D., M.Ch.R.U.I.
W. MILLIGAN, M.D., M.Ch.

MANAGING SUB-EDITOR :

W. JOBSON HORNE, M.A., M.D., B.C.Cantab., M.R.C.P.Lond.

WITH THE CO-OPERATION OF

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THE
JOURNAL OF LARYNGOLOGY
RHINOLOGY, AND OTOTOLOGY.

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RETROSPECT OF LARYNGOLOGY, 1905.

BY JOHN MACINTYRE, M.B., C.M., F.R.S.E.

WHILE it may be said that physicians and surgeons engaged in our special department have, during the past year, shown greater activity in the study of diseases in other regions of the upper respiratory tract, still a great amount of good work has been done in laryngology. The discussions which have taken place during the year in the section of Laryngology of the British Medical Association, the British Laryngological, Rhinological and Otological Association, and the excellent clinical material brought forward by the London Laryngological Society, as well as many continental associations of a similar kind, show that nearly all the great acute and chronic groups of disease which affect the larynx have been carefully studied. Some of the papers published in this JOURNAL, such as those by Drs. Gruenwald and Jobson Horne, the latter particularly valuable from the pathological standpoint; "Laryngeal and Pulmonary Tuberculosis," by Peyre Forcher; "The Relation between Laryngeal and Pulmonary Tuberculosis," by Dr. Chappell; and Dr. Nikitin's valuable contribution referred to in the April number of our JOURNAL, may be taken as examples of the serious attempts which are being made to reconcile the various conflicting views held of this terrible malady. There can be no doubt that steadily, if slowly, the profession is tending in the direction of

placing the treatment, medicinal or operative, upon a scientific basis.

The question of malignant disease has engaged the attention of the American Laryngological Association, and the discussions recorded in the *Transactions* for 1905, including papers by Drs. Cobb, Kyle, Jackson, and others, all tend to show the steady progress which is being made in the determination to insist upon early diagnosis and the arrest of the disease before such extreme measures are required as complete extirpation of the organ.

Amongst the interesting papers may be mentioned that on "Papilloma of the Larynx in Children," by Dr. Peyson Clark, who states that of 12,623 children under fourteen years of age, twelve of papilloma of the larynx only were recorded. The author pays particular attention to the advantages of modern treatment by Kierstein's and Killian's instruments. Many instances are recorded of foreign bodies either being expelled or removed from the respiratory passages, not only in the region of the larynx, but also down in the tracheal bronchial tubes. Of the former, Dr. Thistle's case of obstruction of the left bronchus by a shoe-button, recorded in the July number of this JOURNAL, is interesting, as is also the case of Gostau, where a case of false teeth was impacted in the larynx below the vocal cords. In this case also the foreign body was extracted by intra-laryngeal method. Dr. Mosher dealt with this subject in a paper read before the American Laryngological, Rhinological, and Otological Association last year, and there can be no doubt that the profession is becoming more and more alive to the valuable work of Professor Killian. The treatment of chronic laryngeal and tracheal stenosis by Drs. Rogers and Bryson Delavan, published in the *Transactions of the American Laryngological Association* last year, is extremely interesting, particularly in view of the difficulty of treatment of such affections, notwithstanding the former efforts of Professor von Schrotter.

As usual, a considerable number of new instruments have been recommended to the profession during the year; and, amongst others, we note Dr. Wyatt Wingrave's syringe for intra-laryngeal injections; the instrument may be made specially for distributing the fluid into the supra-glottic area; Dr. StClair Thomson's forceps for opening peritonsillar abscess; Dr. Paterson's laryngeal forceps for use in direct laryngoscopy. Greater attention is being paid to nebulisers and sprays. Sir Felix Semon showed one at the London Laryngological Society for fluid vaseline, while the Victor electrical air-compressor used in conjunction with a pump driven by an

electrical motor has proved of great use, especially to those who have hitherto found great trouble from the employment of water-power, and specially where only low pressure can be obtained. Killian's instruments have been improved and new ones added during the past year.

In drugs we have a considerable number of improvements and novelties: amongst others may be mentioned eudrenine, made from beta-eucaine hydrochloride and adrenalin chloride, which promises to be of service in minor and major operations, both from the anæsthetic standpoint and its value in arresting bleeding, the injection of adrenalin preventing the immediate absorption into the blood, and thus prolonging its anæsthetic effect. Thyroidectin, prepared from the blood of thyroidectomised animals for the treatment of exophthalmic goitre, is at present on trial.

The question of the value of X rays in malignant disease of the larynx has again been raised in a discussion in the London Laryngological Society during the year. Conflicting reports have been recorded upon this question, and it is remarkable that the X rays, which for the most part are used in superficial structures, have so little influence in the larynx, which is so near the surface. Some writers have even spoken of deleterious results, and it must be confessed that so far the therapeutic advantages have not been encouraging. It must not be forgotten, however, that agents applied to the surface may produce an effect on the deeper structures, as we well know in the application of heat to the body in acute inflammatory conditions of the deeper tissues, and it should also be remembered that the X rays merely represent one of the forces which are now being investigated. Recent investigations would seem to show that waves of light of different parts of the spectrum, while possessing to a certain degree common properties, act in different ways, yet each kind possesses properties of its own, and hence they all vary in physiological action. From the therapeutic standpoint, however, the last word has not been said. The X rays have, on the other hand, proved of great value in diagnosis, not only of foreign bodies but also of thoracic conditions affecting the larynx, as the many cases recorded in the journals during the year show.

The outstanding event of last year, and one which will never fade from the memory of those privileged to take part in it, was the centenary in honour of Señor Manuel Garcia held in London on March 17, 1905. Such an event must be comparatively rare in the history of mankind, because, while many have made discoveries

of the greatest importance to the human race, extremely few live to such an age or are privileged to see their inventions carried so fully into actual practice.

The whole proceedings of the centenary were so organised as to produce most interesting recollections, and even to those who had not the opportunity of attending the records of the proceedings published in the medical journals throughout the world must have given the greatest pleasure, and particularly to all interested in medical science generally, and laryngology in particular. The enthusiastic expressions of congratulation of all present, the many addresses from learned societies, and the deserved honours conferred upon him by three great European Sovereigns must have produced feelings of profound gratification in Señor García's mind, but we have little doubt, from the simple, kindly, and dignified attitude of the discoverer himself, that above every other thing that which gave him the greatest sense of satisfaction was the reception of so many testimonies from all parts of the world acknowledging the incalculable influence for good in the alleviation of human suffering which the discovery of the laryngoscope had proved in the hands of competent workers.

Some journals commenting upon the centenary, while paying the greatest possible compliment and congratulations to Señor García for his invention, pointed out that the lines of medical and surgical discovery had to be followed up after the invention of the instrument—lines which the inventor himself was not qualified to pursue—and regretted somewhat that no endeavour seemed to have been made to associate with his the great names, such as Czermak, who had specially applied the laryngoscope to the study of disease. In this connection the name of the late Sir Morell Mackenzie, whose work was done in London, must be added, for although Czermak may be looked upon as the earliest worker in the clinical field, no greater record can be found than that of him whose great classical clinical work surpassed all others to an extent which can only be appreciated at this time of day by a comparative study of contemporary medical writers and also of those who preceded him. Such regrets, no doubt, were expressed at the time, but after all the occasion was one when men were met to do honour to Señor García only. He who gave us the instrument made all the rest possible, and while it is not likely medical men can ever forget the members of their own profession who contributed so much to the advancement of science, the centenary was in honour of Señor García himself. We rejoice to think, when again writing a retro-

spect of laryngology, that he is still with us, and it gives us the greatest pleasure once more to refer to the great and merited honours which were conferred upon him last spring, and respectfully and gratefully to congratulate him once more at the beginning of the present year.

RETROSPECT OF RHINOLOGY, 1905.

BY WILLIAM MILLIGAN, M.D.

THE most efficient means of re-establishing the patency of the nasal passages when obstructed as the result of deviation of the nasal septum has been much discussed of late years, and several important operations have been designed and carried out, with varying degrees of success. The well-known operations designed by Asch and by Moure were formerly extensively practised. Of late the "window resection operation," modified by various surgeons for particular requirements, has gained much popularity amongst rhinologists. The very excellent results obtained fully justify the favourable opinions expressed with regard to it. Perhaps the most important objection raised against this operation is the amount of time that has to be spent in its performance. Whether it should be performed under local or general anæsthesia is a question for consideration in each particular case, but that it can be successfully and practically painlessly performed after the submucons injection of cocaine and adrenalin solution is a matter of great moment to both patient and operator. The results obtained from the "window resection operation" are so good and permanent as to fully justify the high position the particular operation occupies at the present time.

The surgery of the nasal accessory sinuses claims many devotees; and although no striking advance has been made during the past year in improving existing operative measures or in establishing new procedures, the mass of literature upon the subject is an indication of the interest taken and of the value attached to radical and curative measures of relief. The Killian operation for the cure of frontal sinus suppuration is now generally regarded as the measure most likely to permanently cure the disease and obliterate the sinus. The resulting deformity when the bridge of bone is left is so slight as to be in many instances hardly noticeable, and its possible injurious effects upon vision and the movements of the

eyeball have so far been very slight. The advances made in the treatment of frontal sinus suppuration since Ogston's epoch-making paper published in 1884 show the gradual and progressive steps in the evolution of successful operative interference upon a cavity admittedly difficult to obliterate and heal.

The surgery of the sphenoidal sinuses has also received a fair share of attention, and their accessibility after a preliminary removal of the middle turbinated body has been impressed upon the profession by many excellent papers. The rôle played by sphenoidal sinusitis in the production of certain ocular defects is now fully recognised by rhinologists and ophthalmologists.

A most excellent paper upon suppuration in the accessory sinuses of the nose, from a bacteriological and clinical standpoint, published in the *Edinburgh Medical Journal*, November, 1905, by C. I. Lewis and A. Logan Turner, contains much practical information, and the conclusions are so important as to warrant reproduction *in extenso*. These authors find:

(1) That the organisms found in the healthy nasal cavities belong to the same varieties as those occurring in abnormal conditions of the nose.

(2) That the pus obtained from some cases of antral suppuration may combine organisms similar to those occurring in the buccal cavity.

(3) That occasionally bacilli distinctive of dental caries may be isolated from the pus of an antral abscess.

(4) That the healthy accessory sinuses are probably sterile.

(5) That there are three main types of organisms commonly met with in suppuration of the accessory sinuses—namely, streptococci, pneumococci, and staphylococci.

(6) That in the cases of chronic suppuration streptococci were found in 80 per cent., whilst in the more recent cases they occurred in 60 per cent.

(7) That the swabs taken direct from the affected cavities provide from the bacteriological standpoint more trustworthy results than swabs taken in the same cases from the nasal cavities.

(8) That in recent cases virulent organisms are met with twice as often as in cases of chronic suppuration.

(9) That clinical evidence supports the view that the antrum is more frequently infected by way of the nasal cavity, and that this opinion is corroborated by bacteriological investigation.

(10) That nasal polypi occur more frequently in cases of associated sinus suppuration than in simple cases of antral abscess;

their association with ethmoidal cell suppuration, whether occurring alone or as a complication of other sinus inflammation, is evident from the cases quoted.

(11) That the recent cases of uncomplicated antral suppuration, as contrasted with those of a chronic type, respond more readily to treatment by lavage.

The value of subcutaneous injection of paraffin for the relief of certain nasal deformities has been emphasised by many writers. Its fate after injection has been the subject of an interesting study by Broeckaert (*Rev. Hebd.*, August 19, 1905), who shows that the various changes that take place depend upon two separate factors. If paraffin of a high melting power be used, the injected mass becomes gradually encysted. If, however, the melting point be a low one, the injected mass becomes gradually tunnelled by small blood-vessels and by a network of connective tissue.

Subcutaneous injections of paraffin have also been employed in the treatment of ozæna, as also have high-frequency currents. No real step in advance has, however, been made in the treatment of this troublesome pathological condition. Its possible relationship to accessory sinus disease, to tubercle, and to diphtheria has been discussed time after time without any tangible result.

RETROSPECT OF OTOTOLOGY.

BY DUNDAS GRANT, M.D., F.R.C.S., AND CHICHELE NOURSE,
F.R.C.S. EDIN.

ALTHOUGH the past year has not been characterised by any very sensational additions, there has been evidence of activity and progress during the whole time. The meeting of the British Medical Association at Leicester gave occasion for a very valuable discussion on the subject of acute suppuration of the middle ear. In the Otological Section of the New York Academy of Medicine a memorable symposium was held, in which the subject of suppurative inflammation of the middle ear in children was specially discussed, as regards the anatomy, pathology, etiology, and surgery.

The Otological Society of the United Kingdom has not been behindhand. A very memorable meeting was held at Manchester. There Professor Stirling reviewed the development of the organ of hearing from the lowest orders of animals up to that of man.

Professor Young brought forward, with Dr. Milligan, some anatomical observations on the relation of the accessory cavities of the middle ear, which have important bearings upon the treatment of median otitis, and important papers were read by Professor Yonge, Dr. Milligan, Dr. Dundas Grant, and Dr. Gordon.

The reports of the meetings of the French and Belgian Societies will be found to be full of interest, even though no very striking revolutionary departures have been made.

Acute suppuration of the middle ear, as we have said, received attention at the meeting of the British Medical Association at Leicester. One of the best of the cleverly selected subjects for discussion was the consideration of the line of treatment in preventing acute middle-ear suppuration from becoming chronic. Every conscientious aurist must have been struck by the number of chronic cases coming under his notice, and have asked himself whether they are not preventible, and how they are to be prevented. Dr. Milligan (511), founding on his clinical observations as well as on the anatomical researches carried out by him in conjunction with Professor Young of Manchester (459), considers that propagation of disease along the aditus into the antrum and mastoid cells is easily brought about by inflation of the middle ear through the Eustachian tube, the tympanic orifice of the latter being in direct line with that of the aditus. The more vital factors in the treatment were early paracentesis, evacuation by suction applied to the meatus, and the insertion of strips of cyanide or iodoform gauze. The paracentesis perforation might require re-opening from time to time, and many joined in advising the earlier resort to operative opening of the mastoid cells. The obstinacy of scarlatinal cases was explained by the virulence of the infection and the depressed state of the patient. So unfavourable are these cases that in Dr. Gordon's (511) experience the opening of the mastoid cells has proved insufficient, and he now resorts to the radical mastoid operation.

The study of ear-diseases in children constitutes a special and very important chapter of otology, and the discussion on them, in which Drs. Jacobi (616), Wiener, McKernon (617), Dench (615), and other American *confrères* took part, deserves to be read with care. Drs. Wiener (617) displayed a trust in "conservative" measures which was not generally shared, but which cannot be passed over without consideration.

In the American Laryngological, Rhinological, and Otological Society an interesting discussion followed a paper by Dr. John

H. McCollom (542) on "Nose and Ear Complications in Diphtheria, Scarletina, and Measles." Dr. Dench insisted on the value of early operation on the mastoid, even if only for the preservation of hearing. Dr. Sprague (547) narrated his experience in scarlatina and Dr. Day and others (551) in typhoid. The necessity for watching the ears during these diseases was rendered very evident, and the room for "missionary" work among practitioners was referred to by more than one speaker.

The subject of vertigo was dealt with by the Otolological Society of the United Kingdom, the discussion being opened by Sir Victor Horsley and Dr. Risien Russell. The whole discussion received consideration in an editorial article (403), in which the arguments and conclusions were briefly summarised; but the original communications (403 and 409), as well as the contributions to the discussion by the President (433), Dr. Dundas Grant (433), Mr. Richard Lake (436), Professor Pritchard (437), Dr. William Hill (437), Dr. Tilley (438), Mr. Waggett (439), Mr. Hunter Tod (439), and Mr. Hugh Jones (440), may be read with benefit *in extenso*. The otological aspect of the subject received the fullest attention from Dr. Dundas Grant (433). The whole discussion tended to show that though many cases were clear to the neurologist, and many others to the aurist, there remained some in which the co-operation of both was required. Mr. Lake's (257) and Dr. Milligan's (105) cases of deliberate evisceration of the labyrinth are among the most striking additions to the treatment. Dr. Clarence Blake (675) gives his views on aural vertigo (675), considering it primarily as the result of pressure on the semicircular canals.

ANATOMY AND PHYSIOLOGY.—The theories of hearing formed the subject of a lecture by Gray (298). Mongardi (675) wrote upon the transmission and reception of sound by the ear. Various points in the anatomy of the ear and petrous bone have been studied by Mouret (112), Yearsley (351), Shambaugh (506), and Alvertton (350). Cheatle (264) noted a membranous septum in the lateral sinus, and showed sections of temporal bones (150) at the Otolological Society. Young and Milligan studied the development of the middle ear in relation to Otitis media (459).

THE EAR IN CHILDHOOD.—Abstracts of papers relating to its anatomy, diseases, and operative treatment by Bryant (506), King (620), Kenefick (506), Laurens (399), and Dench (615) will be found at the pages indicated.

AURICLE.—A case of congenital malformation of the auricle (264),

and also (263) a case of neoplasm of the auricle, caused apparently by wearing an ear-ring, were shown at the Otological Society by Wingrave. At the same Society Yearsley showed a case of angeliolipoma of the auricle and meatus (256). Two cases of malignant growth of the auricle were recorded by Szenes, one a melanotic sarcoma, the other an epithelioma (617); and a specially interesting case by Viollet (315), in which epithelioma appeared in a patch of lupus on the helix.

MEATUS.—At the Otological Society Kelson (151) showed a case of congenital atresia of the auditory meatus, which had been explored by operation; Waggett (151) showed a case of endothelioma of the auditory meatus, and Macnaughton-Jones (262) a case of atresia. A case of necrosis of the wall of the meatus was recorded by Ferran (352) and a case of osteoma lying free in the meatus by Szenes. At the British Laryngological, Rhinological, and Otological Association Grant (41) showed a case from which he had removed an exostosis. Oxygenated water was successfully used by Guarnacia (53) in the treatment of otomycosis.

MEMBRANE AND OSSICLES.—The employment of collodion in relaxation of the membrane was the subject of a paper by Chavanne (112), and also one by Bryant (354). Cases showing curious conditions of the membrane were shown at the Otological Society by Lawrence (urticaria of the drum) (149), and Whitehead (emphysema of the membrana) (255). A case of cysts of the tympanic membrane was recorded by Hang (168). At the Otological Society Macnaughton-Jones (157) showed a drawing of a traumatic perforation of the membrane.

CHRONIC NON-SUPPURATIVE CATARRH OF THE MIDDLE EAR.—At the meeting of the British Medical Association, Bronner (102) discussed the value of treatment by compressed air and nebulisers in certain forms of this affection.

OTOSCLEROSIS.—Möller (619) recorded a case, with antopsy, and Hammerschlag (673) has demonstrated the influence of heredity in this affection.

CHRONIC SUPPURATIVE INFLAMMATION OF THE MIDDLE EAR.—At the British Laryngological, Rhinological, and Otological Association Collier (443) showed a case following fracture of the base. Hubbard (473) considers that obstruction of the Eustachian tube is a factor in its production.

FACIAL PARALYSIS.—The technique of the operation for anastomosis of the nerve was described by Villar (56).

MASTOID DISEASES.—At the American Laryngological, Rhino-

logical, and Otological Society, Duel (27) read a paper upon cases illustrating difficulties in the diagnosis of mastoid complications, and McCaw (27) one upon mastoiditis.

At the Otological Society, Tod (265) showed a case of mastoid fistula; Lawrence read notes of a case of mastoid abscess following measles (163), and Turner showed three temporal bones from cases of chronic middle-ear suppuration.

Pugnat (168) recorded a case of periostitis of the temporal bone with subperiosteal abscess, Brandegee (674) a case of double mastoiditis with involvement of the zygomatic cells, and Braislin (564) a case of mastoiditis with a large sequestrum in an infant.

MASTOID OPERATION.—Waggett contributes a useful note upon skin-grafting (363). Moure and Brindel tabulated five hundred cases of mastoid operation (351). Braislin has placed on record (564) two anatomical anomalies encountered during mastoid operations. Harland (674) described an interesting case of secondary anæsthesia, hemiplegia following the mastoid operation. At the American Laryngological, Rhinological, and Otological Society, Sprague (466) showed a case of radical mastoid operation in which healing under blood-clot had occurred. At the Otological Society Heath (84) described his method of performing the radical mastoid operation.

NEW INSTRUMENTS.—At the Otological Society Lake showed an oto-masseur driven by a turbine (82). An instrument for the application of suction to the ear has been invented by Sondermann.

MISCELLANEOUS.—Besides the foregoing, the year's work has produced a quantity of interesting material which cannot be classified. At the British Medical Association, Syme described a case (159) of congenital word-deafness. Milligan showed a number of cases at the Manchester meeting (500) illustrating the results of operation in various types of aural and nasal disease. On the same occasion Sewell (557) gave an interesting statistical report of 5000 cases of ear disease. "Local Anæsthesia for Aural Operations by Neumann's Method" was the title of papers by Seymour Jones (423) and Stoddart Barr (430). Pinder (498) recorded a case of vascular intra-tympanic growth. Hennebert (620) has written upon oto-ocular reflexes. Goris (674) described some cases of intervertebro-digastric abscess in connection with ear disease. Tinnitus aurium has been studied at the American Laryngological, Rhinological, and Otological Society by Bryant (485), who discussed its relations to auditory hallucinations, and in another paper the treatment of tinnitus (16). At the Otological

Society McBride (420) described a case of cephalic bruit and deafness of sudden onset.

Numerous other interesting communications will be found in the index to the volume under their appropriate headings.

SOME NEW INSTRUMENTS FOR REMOVING FOREIGN BODIES FROM THE BRONCHI BY DIRECT BRONCHOSCOPY.

By WM. CUTHBERT MORTON, M.A., M.B., CH.B. EDIN.

IN the course of special study in Germany during the last year it was my good fortune to be in Freiburg visiting Professor Killian's clinic, when there was sent in for treatment a case, of which, as Professor Killian will be publishing it in due course, I give only the following brief summary: The patient was a boy, aged ten, who was found to have a collar-stud lying in the left bronchus, with the plate uppermost. In addition to this extremely unfortunate position of the stud, the mucosa on the near side of the plate was much swollen.

Although the ordinary hook, the instrument best adapted to the case in hand, slipped with comparative ease between the edge of the plate and the wall of the bronchus, yet, if the least upward pressure were applied, it glided off with a distinctly audible sound. After an hour's unceasing effort, all hope of being able to remove the stud through the mouth was given up, and, tracheotomy having been performed, the attempt was renewed through this wound, but with no better result, so that the operation had to be abandoned. On the following day the temperature was down, and the child was given time to recover his strength. On the morning of the second day, the condition again becoming urgent, he was again anaesthetised, and a further effort made to recover the stud. For some time it could not be dislodged from its position; ultimately it was removed, not, however, before it had slipped off the hook into the right bronchus, and again into the trachea just at the level of the wound. The tracheotomy tube was taken out the same evening, and after a week the patient was discharged from the clinic.

That so much could be done with the hook was striking, but the thought was inevitable whether an instrument could not be devised by which a stud in such a position might be firmly grasped and safely drawn through the stricture and up through the air-passages. I laid a model of such an instrument before Professor Killian, who at once asked me to work it out at the expense of the

University Clinic. This work resulted in the following instruments, all of which met with Professor Killian's approval, and in reference to the first of which he stated that had he had it at the time of the first operation the safe removal of the stud through the mouth without tracheotomy would have been the work of but a few minutes.

To understand these instruments, let us look at any pair of tubular forceps. It consists of—

(1) An outer part, one piece, made up of the outer part of the handle or grip, from which runs the tube, the tube carrying on its free end the forceps.

(2) An inner part, made up of the inner part of the handle or grip, screwed into which is the rod, the rod carrying on its free end the ring to encircle the legs of the forceps.

(3) The spring.

The instrument being put together, pressure on the inner part of the grip forces the rod down through the tube and the ring down over the legs of the forceps, which are thus compelled to close. Now, instrument "A" consists of—

(1) An outer part, one piece, made up of (*a*) the outer part of the grip, from which runs (*b*) the tube, the tube carrying on its free end (which is solid) (*c*) the hook. At the point where the lumen of the tube ends the wall of the tube is perforated opposite to and not far from the hook. The hook is inserted into the end of the tube at a slightly obtuse angle, its near edge is toothed and only slightly concave.

(2) An inner part, made up of (*d*) the inner part of the grip, screwed into which is (*e*) the rod, the rod being somewhat curved towards its point, and the point being sharp, so that the whole rod forms a long needle.

(3) The spring.

Pressure on the inner part of the grip forces the needle down through the tube, out of the end of which it passes through the perforation on the face of the tube in such a way that the point of the needle is driven to meet the toothed near edge of the hook some distance from the insertion of the hook into the tube, *i. e.* towards the point of the hook. The curve in the end of the needle allows its point to come well towards the point of the hook; it also eases the work of the spring. Even in the tube the needle lies with the curve in the same plane with the hook, being kept in this position by the proper adjustment of the needle to the inner part of the grip, which again is adjusted to the outer part of the grip by means of a guide.

The instrument can thus be manipulated like the ordinary hook until the hook is in position on the far side of the plate of the stud. Then pressure on the inner part of the grip forces the point of the needle (which so far has been lying concealed within the tube) against the near side of the plate, which is thus secured between the needle and the hook. Within these limits the stud cannot move, otherwise its movement is free, and yet so perfectly is it under control that it can be drawn upwards with any reasonable amount of force. Resistance against the opposite wall of the bronchus is diminished by the slight obtuse angling of the hook and by the slightness of the concavity of its toothed edge. Stability of the stud is favoured by the needle not being too slender and by its not being long enough quite to reach the hook, as well as by the perforation being near the point of insertion of the hook. As this makes the passage forwards of the needle more difficult, the end of the needle must be curved. Further, the hook must not be so long as to reach the neck of the stud.

Instrument "B" is like "A," except that the end of the needle is split into two points, which come down one on each side of the toothed edge of the hook, thus affording a very firm grasp.

Instrument "C" is like "A" and "B," but the hook is deeply concave and the needle comes well forward to the point of the hook, which, however, it must not touch, so as not to nip the mucosa. A stud can be fairly grasped by the neck, and any such foreign body as the eye of a "hook and eye" perfectly secured.

Instrument "D," a fenestrated hook-shaped forceps for grasping the head of a stud, etc., the hook shape admitting of better oversight of the blades of the forceps, while fenestration allows gracility of build.

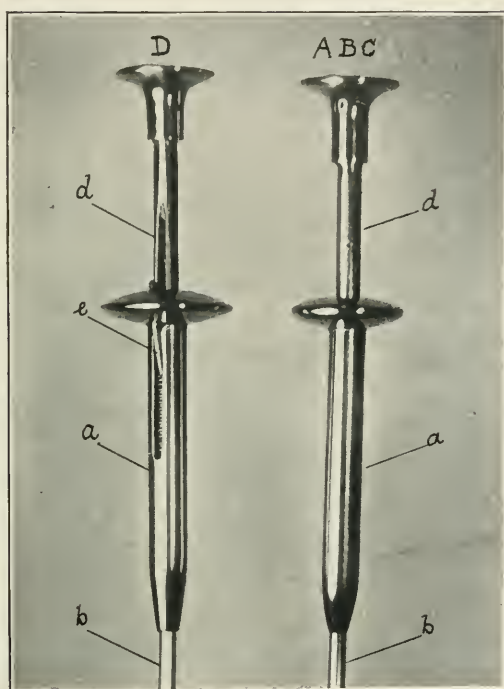
The above forceps are fitted with an "inverted grip," which suits any other tubular forceps equally well, and consists of—

(1) An outer part, made up of (*a*) the outer part of the grip, a piece by itself, with a longitudinal slit, and with a hole into which (*e*) the rod is screwed; (*b*) the tube, which, with (*d*) the inner part of the grip, forms one piece.

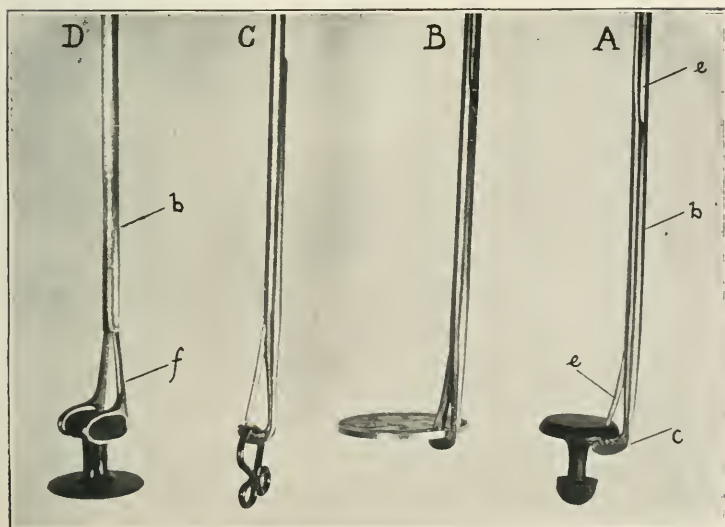
(2) An inner part, made up of (*d*) the inner part of the grip which with (*b*) the tube forms one piece; (*e*) the rod with a thread at one end to be screwed into (*a*) the outer part of the grip; (*f*) the forceps at the end of (*e*) the rod, with which they form one piece.

(3) The spring.

Take the piece made up of (*d*) the inner part of the grip and (*b*) the tube. Slip (3) the spring over (*b*) the tube up to (*d*) the



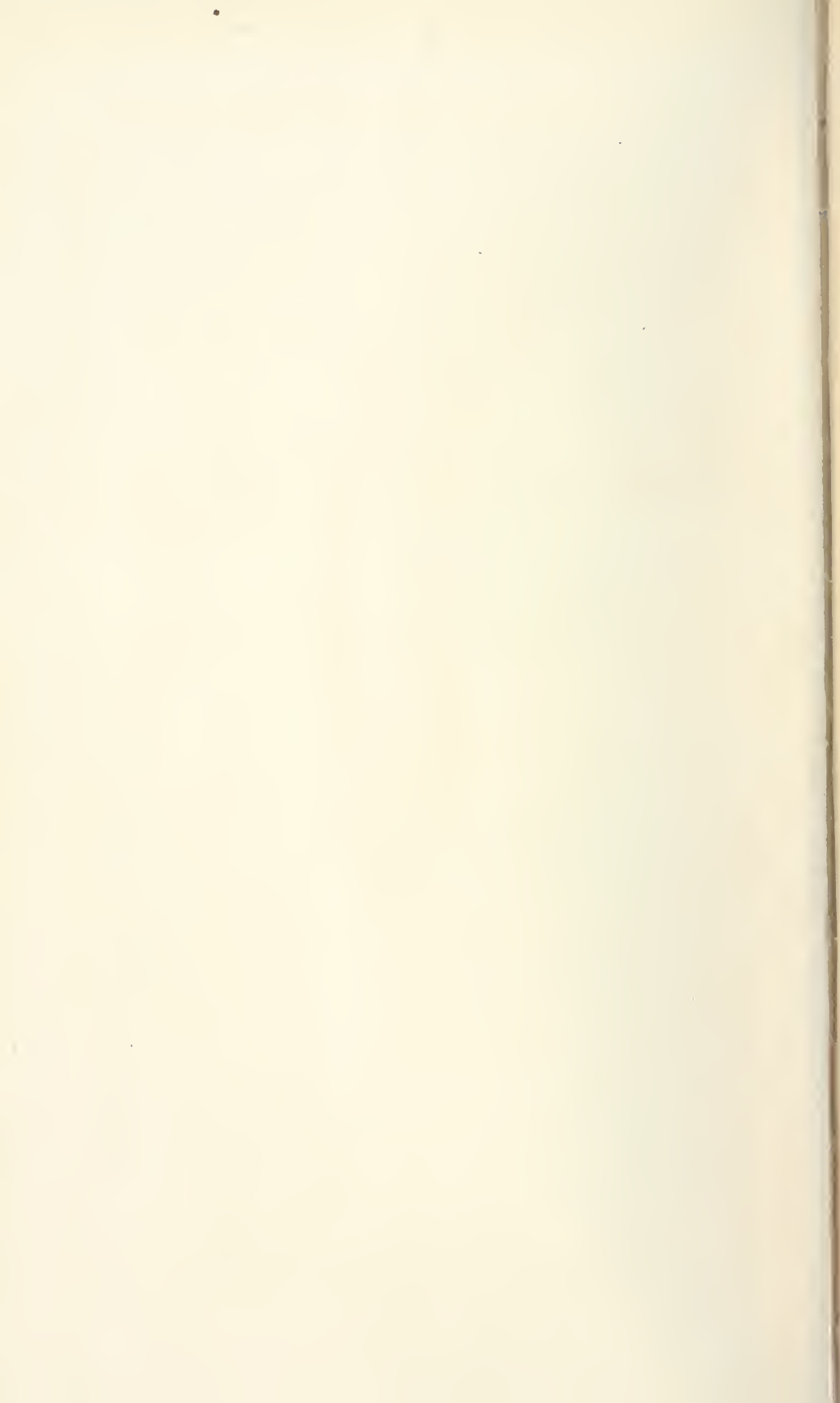
A B C.—*a*, Outer part of grip; *b*, tube; *d*, inner part of grip.
D.—*a*, Outer part of grip; *b*, tube; *d*, inner part of grip; *e*, rod.



A, B, C.—*b*, tube; *c*, hook; *e*, rod. D.—*b*, tube; *f*, forceps.

In A B C, *a*, *b*, *c* = one piece; *d*, *e* = one piece (after adjustment). In D, *a* = one piece; *d*, *b* = one piece; *e*, *f* = one piece. (Actual length of instrument about sixteen inches; reproductions about natural size.)

To illustrate Mr. Cuthbert Morton's paper on "Some New Instruments for Removing Foreign Bodies from the Bronchi by Direct Bronchoscopy."



inner part of the grip. Then slip (a) the outer part of the grip over (b) the tube till it rests against (3) the spring. Pass (e) the rod up (b) the tube until it reaches the level of (a) the outer part of the grip. Here (b) the tube has a slit on one side corresponding to the slit in the outer part of the grip, through which slits (e) the rod is so guided that its threaded end slips into the hole in (a) the outer part of the grip, into which by a few turns it is screwed. Pressure on the inner part of the grip forces the tube freely through the distal end of the outer part of the grip, so that the distal end of the tube passes down along the rod over the legs of the forceps, which are thus compelled to close. This grip dispenses with the ring, which not only interferes with the field of vision, but also renders the instruments difficult to take to pieces and to clean. It also completely avoids the fault common to so many forceps in which the closing is effected by the end of the tube. With this grip the forceps remain *in situ* and do not on being closed run upwards towards the operator's hand. Instability of the forceps through torsion of the rod is overcome by the free end of the tube being oval in cross-section to correspond with the spreading out of the legs of the forceps.

In all the above instruments the tube throughout the greater part of its length is only half complete, being semicircular in cross-section. At intervals narrow rings of wall are left which safely confine the rod within the tube. That the cleaning of the tube is thus much simplified is obvious.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

Annual General Meeting held on Friday, November 10, 1905, at the Medical Society's rooms, 11, Chandos Street, Cavendish Square, W.

Mr. CHICHELE NOURSE, and subsequently Dr. R. H. Woods, occupied the Chair.

THE following officers were elected for the session 1905-6 :

President: Dr. R. H. Woods (Dublin). *Vice-Presidents:* Dr. W. H. Kelson (London), Dr. John Macintyre (Glasgow), Dr. Walton

Browne (Belfast). *Council*: Metropolitan—Mr. Chichele Nourse, Mr. Mayo Collier, Mr. Stuart-Low, Dr. Andrew Wylie; Extra-Metropolitan—Dr. Arthur Hutchison (Brighton), Dr. Brown Kelly (Glasgow). *Hon. Treasurer*: Dr. Percy Jakins. *Hon. Secretaries*: Mr. Harold Barwell, Mr. J. M. Carvell.

Mr. James McCosh, M.B., C.M., was duly elected a Fellow.

Mr. Vinrace presented to the Society a portrait of the late Sir Morell Mackenzie and a handsome microscopical cabinet.

The following communications were made:

Dr. WYATT WINGRAVE showed a case of *Fixation of Right Vocal Cord in a Male, aged fifty-six*.

There were symptoms of difficult deglutition and gradually increasing hoarseness of six months' duration. The right cord was fixed, the left impaired in movement. An œsophageal bougie met with great resistance at about the cricoid level, but beyond that passed freely to the stomach. He had a feeble, almost aphonic, voice, and could only swallow pultaceous food. There was considerable periarthenoid infiltration, and a hard swelling was felt just behind the cricoid cartilage on the right side.

No thoracic abnormality could be found; the pupils and the radials were equal.

There was a definite specific history of a primary sore eighteen years ago, but scanty secondary evidence. He had been under specific treatment for three months without any variation in his condition, and had not lost weight. There was no factor nor any toxic signs.

Dr. DUNDAS GRANT was disposed to attribute this paralysis to involvement of the right recurrent laryngeal in carcinoma of the œsophagus. There was reported the presence of an obstruction to the passage of an œsophageal bougie, and he could feel a distinct thickening on the right side of the œsophagus, while on the opposite side of the neck, close to the region of the sterno-mastoid muscle, there was an enlarged gland. He thought that before long the symptoms would become well marked.

Mr. CLAYTON FOX considered that this case seemed to be one of gummatous infiltration of the œsophagus involving the recurrent laryngeal nerves. The right cord was fixed in the middle line and the left in a condition of paresis. From the fact that there was definite stenosis at the cricoid level aneurysm would be negatived, and from the absence of wasting malignancy might be put out of the question.

Dr. WYATT WINGRAVE showed a case of *Ulceration of Epiglottis in a Female, aged twenty-two.*

Symptoms of sore throat and slight difficulty in deglutition dates from parturition, four months previously. The patient had been married eighteen months, and had one healthy infant. On the first examination, ten days ago, a small, rough area was seen at the left of the aryepiglottic fold; in one week this increased in size to its present state. The epiglottis was red, and infiltrated on its left edge was a sharply-defined yellowish ulcer with red edges; it was shallow, if not flat, and about 10 mm. in diameter. Smears have been taken several times; neither tubercle bacilli nor *Spirochaeta pallida* could be found. The lungs were perfectly healthy.

Mr. CHICHELE NOURSE showed a *Case of Laryngeal Neoplasm.*

This patient, a man, aged thirty-seven, rather addicted to tobacco and alcohol, had a growth the size of a small pea attached to the edge of the right vocal cord at the junction of the anterior and middle third. On attempted phonation, it rose up between the cords and prevented them from approximating. At the same time, the right arytenoid passed across in front of the left.

Mr. J. BARK suggested that it was a growth from the anterior commissure, probably a soft fibroma, and of embryonic origin.

Dr. DUNDAS GRANT observed some anomalies in the movements of the vocal cords, which he thought could not be explained merely by mechanical obstruction produced by the growth itself. He thought there was some underlying disease, the nature of which would be revealed by the removal of the growth and its examination under the microscope.

Dr. W. H. KELSON said the growth being under the cords one could not say how extensive it might be, and as there was so much loss of movement in the left cord that might be due to infiltration. Therefore one must not forget the possibility of malignant disease, and that when thyrotomy was performed the disease was often found to be much more extensive than appeared when examined by the mouth.

Mr. NOURSE, in reply, said this patient when first seen was very intolerant of examination, but afterwards became less so, and it was then clearly seen that the attachment of the growth was at the junction of the anterior and middle thirds of the cord.

Mr. CHICHELE NOURSE showed a *Case of Dysphagia.*

The patient, a male, aged sixty-one, first sought advice at the

beginning of last July on account of a difficulty of swallowing which he had first noticed about three years before. The difficulty was greatest for liquids, and food was apt to return some hours after it had been taken. The teeth were very deficient. There were no signs of aneurysm or other abnormality in the chest. His weight, nearly 12 stone, had remained constant during the time he had been under observation. A full-sized bougie passed well into the stomach and gave some relief to the symptoms. At that time the larynx was normal and the cords moved well.

About the middle of August the patient first noticed hoarseness of the voice, which became more and more husky at his next examination. A papillomatous projection in the region of the vocal process of the left cord was observed, with ulceration and limitation of movement; the left ventricular band was also thickened. There was no pain.

The condition looked decidedly suspicious; however, it rapidly improved under specific treatment—iodide of potassium and small doses of bichloride of mercury.

On October 4 it was noted that the swelling was much less and that the left cord was freely movable. The voice was also stronger and there was no difficulty of swallowing. At the present time the vocal processes of both cords were thickened and abraded. The man admitted having had a specific sore many years ago.

Dr. DUNDAS GRANT said that in Mr. Nourse's case of difficulty in swallowing, food returned unchanged after several hours; there was a welling up of frothy mucus from the right hyoid fossa on laryngoscopic examination, and this was increased when pressure was made upon a soft oval swelling in the right side of the neck. He understood from Mr. Nourse also that there was no obstruction to the passage of a large œsophageal bougie. In all these respects the case was on all fours with one recently under Dr. Grant's care, in which the diagnosis of an œsophageal pouch was finally confirmed by a skiagram taken after the patient had swallowed an emulsion of bismuth; a dark oval patch was then seen in front of the fifth and sixth cervical vertebrae. Dr. Grant subsequently removed the pouch by operation, and the patient's swallowing was then always quite satisfactory. He recommended the same method of diagnosis in Mr. Nourse's case, and if this was confirmed, the same kind of treatment.

Dr. ANDREW WYLIE showed a case of *Congenital Specific Disease*.

W. H—, aged fifteen, a weakly lad since birth, pale and thin. but about fourteen months ago he became very much worse, losing flesh rapidly, emaciated, and at times had great difficulty in breathing. In August he was sent to me to have tracheotomy performed, as these symptoms had increased. The soft palate was seen to be bound down to the pharyngeal wall by means of cicatricial tissue, the epiglottis was nearly gone, the ventricular bands were swollen, and the movements of the cords impaired. The weight was 4 st. 5 lb. Slight cough and expectoration but no tubercle bacilli were found. There were dulness and tubular breathing over the right scapula, and slight sweating at night.

Father living, but has ulcers on both legs; mother alive and well; six children living; four died, all in infancy.

The patient at first was treated for phthisis, but became worse. In September inunctions of mercury and Donovan's solution internally were administered with great success, for, from the first day the symptoms of dyspnœa gradually disappeared, his appetite improved, breathing became more regular, cough less, and the weight was now 5 st. 6 lb. Dr. Wylie considered this a case of congenital specific disease which was not treated, and, the patient becoming tubercular, the symptoms became serious.

The PRESIDENT remarked that the successful treatment of cases of this kind sometimes presented enormous difficulties, especially in the poor and ill-nourished, and he thought the surroundings of the patient were of an importance quite equal to the medicinal treatment.

Dr. DUNDAS GRANT had not heard the history of this case, and admitted that he would have felt great difficulty in making the diagnosis, by laryngoscopic examination alone, from lupus of the larynx. He thought it could only be decided by the effects of treatment, and asked Dr. Wylie whether his diagnosis was founded upon this.

Mr. DENNIS VINRACE asked whether the case was an illustration of congenital specific disease, in which *no* specific remedies had been applied, or whether it was shown to exemplify the result of anti-specific treatment.

Dr. ANDREW WYLIE showed a case of *Injection of solid Paraffin into the Nose without an Anæsthetic*.

The patient was a girl, aged nineteen, who had a distinct "saddle-nose." The paraffin was injected by means of Mahu's instrument in the solid state; an assistant held the head and

pinched up the skin with his two forefingers. There was no pain, and two weeks later a little more was injected. The advantage of no anæsthetic is that the patient sits opposite the surgeon, who can see what amount is required, and if a little more is needed it can be done at another sitting. The cause of many failures is that too much is often injected.

Mr. J. BARK congratulated Dr. Wylie on the very successful result he had obtained in this case, and felt that the Société was under an obligation to him for showing an apparently easy method of performing subcutaneous injections of paraffin for the relief of the saddle-shaped deformity.

Mr. VINRACE thought the question of an anæsthetic was not very material in such cases, but it was most desirable that these cases of injection of paraffin should be exhibited a year or more after operation, when permanent results could be estimated. He pointed out that the immediate result might be misleading to intending operators.

Dr. DUNDAS GRANT was able to corroborate Dr. Wylie's advocacy of the use of solid paraffin, and ventured to think that perfection had almost been attained, more especially as the friable paraffin, such as Dr. Wylie had used, was not likely to form a thread in the puncture, as formerly took place with the non-friable forms of paraffin previously in vogue. With regard to the subsequent history of such cases, he thought that as the injection of warm paraffin had frequently given most durable results, there was every probability that the results of the solid paraffin would be even more durable. He suggested one of the sources of difficulty in following up the cases in female patients might be that, from the increase of beautification, they were likely to get married, and, from change of name, be less easy to trace.

Mr. CLAYTON FOX said he thought one very important danger was eliminated by this method of injection with solid paraffin, viz. embolism, cases having been described where the arteria centralis retinæ had been involved.

Dr. WYLIE, in reply, said he would endeavour to bring this patient and several others next session to show the permanent result.

Mr. STUART-LOW showed two cases *illustrating the Retention of the Cholesteatomatous Lining in the Operation for Acute Mastoiditis, a Sequel of Chronic Suppurative Disease.*

He said that he had shown these two cases as they illustrated

a new departure in the conservative surgery of the ear. There were few surgeons who had not been obliged to operate during an acute exacerbation in chronic cholesteatomatous conditions of the middle ear and its accessory cavities. Hitherto the usual procedure had been to ablate the mastoid cells, and having exposed the antrum, to scrape away every vestige of the cholesteatomatous lining. This was not infrequently attended with disastrous results, especially from secondary meningitis, which is the most fatal form of meningitis. If the middle fossa was already exposed, however, either through the antral or the tympanic roof, the danger of meningitis was increased exceedingly. With the view of minimising the risks, the cholesteatomatous lining, which was in each of these cases a very beautiful one, being firmly placed on the bone, smooth and shiny, and quite complete, was left *in situ*.

Dr. DUNDAS GRANT had left the cholesteatomatous membrane in the surgical treatment of chronic ear suppuration with good results. Regarding this change as a reparative effort of Nature, Mr. Stuart-Low had ventured a step further, and left the lining in operating under these acute conditions. This was fully justified by the results as the discharge had ceased, and the hearing power was preserved almost entirely. The likelihood of either of these cases requiring a radical mastoid operation was very remote.

The practical points were, that having scooped out all the putty-like cholesteatomatous material and left the lining undisturbed, the operator must employ a 50 per cent. solution of rectified spirit to swab out the cavity, and ganze strips saturated with the same solution should be employed for subsequent packing and dressing.

Dr. WYATT WINGRAVE considered that the subject of cholesteatomatous changes in the middle ear required very careful clinical and pathological observation—that clear distinction should be drawn between a passive or primary cholesteatoma and that condition (the commoner one) which occurred as a process secondary to an inflammatory condition—*i.e.* an active desquamative process in which bacteria played such an important part. So long as the “epidermising” surface was kept dry and sterile, and free escape afforded to the rapidly forming squames, complications from that source were unlikely.

In examining the ear discharges he was much impressed with the rapid reappearance and number of the squames after antro-tympanic operations, showing how quickly and fully the epidermisation is re-established, and in cases of neglected cleanliness how rapidly foetid they become.

Dr. A. J. HUTCHISON did not consider the hearing good.

Dr. DUNDAS GRANT considered that Dr. Wingrave had touched a very important question, namely that of the difference between a cholesteatoma as a genuine new growth and the so-called cholesteatoma resulting from the invasion of epidermic epithelium into the cavities of the middle ear and mastoid through a perforation. The former was extremely rare and was probably of the nature of a foetal occlusion; its diagnosis was only possible in the absence of suppuration of the middle ear, or in cases in which the suppuration had been of very short duration, as it necessarily took a considerable time for the suppurative cholesteatoma to form. Dr. Grant's custom in the latter case was to perform a radical mastoid operation and to leave the matrix of the cholesteatoma *in situ*, if it seemed smooth and homogeneous. It was of the utmost importance, however, that the opening into the cavity should be as large as possible. In Mr. Stuart Low's case, in which the cortical mastoid operation alone was done, he questioned whether it would not have been better to have done the radical mastoid operation, seeing that there was a history of long-standing ear-disease. Possibly the cholesteatoma cavity had now got completely shut off from all sources of irritation and might remain quiescent, as at present, but it would be important and interesting to watch the subsequent result of this very important experimental mode of treatment.

Mr. CLAYTON FOX said that, assuming Mr. Stuart-Low's case to be one of cholesteatoma, with acute mastoiditis as a result of its presence, he failed to understand how the cholesteatomatous membrane investing the cholesteatomous mass could be in any other condition than inflamed, and therefore not healthy and stable, as one must infer from the description of the case and the result of the operation.

In reply, Mr. STUART-LOW said that he would bring these cases before the Society again in six months' time, so that the permanent good results of leaving the cholesteatomatous lining might be tested and inspected. The hearing power was retained to a much greater degree than was usual after a radical mastoid operation. Dr. Grant had said that he would have preferred to perform a radical mastoid operation on these cases, but both were much too acute for this to be entertained as at all practicable. So acute were these cases that both were admitted for operation immediately on being seen. One was operated upon the same evening and the other the following morning, as arrangements could not be completed for immediate operation. The question was not whether a

radical or a cortical operation should be undertaken, but whether, having completed a very extensive cortical operation, the danger of complication could be minimised by leaving the cholesteatomatous membrane. The result in each case had fully justified this procedure.

Dr. WYATT WINGRAVE showed the following pathological specimens:

(A) *Lipoma of Buccal Pouch (Congenital)*. Removed by Dr. Wylie from a female patient aged fifty.

It formed a firm, smooth projection into the mouth and caused but slight inconvenience. The structure is adipose tissue with an ill-defined fibrous capsule.

It represented a hypertrophied vestige of the infant's "sucking-pad."

(B) *Squamous Epithelioma of Tongue from a Woman aged forty-two*. Removed by Mr. Nourse.

Its interest lies in the fact that although nests or pearls were not seen in the first fragment removed for diagnostic purposes, yet the marked gametoid characters of many of the nuclei justified the assumption of malignancy, subsequently supported by more extensive sections after removal. The nests are easily seen, with other evidence of malignancy.

(C) *Dermoid Cyst of Neck*. This was one of five similar cases recently examined at the Central London Throat and Ear Hospital. It was removed from a female, aged thirty, by Mr. Nourse, with a history of four years' duration.

There was a well-defined capsule, lined, with stratified epithelium, and scattered among the fibrous tissues were masses of lymphocytes or embryonic elements. The contents were old non-nucleated squames, with hairs and amorphous fatty granules. It was situated in the middle line of the neck, just above the episternal notch, below the deep cervical fascia. The view that such a cyst was dermoid, and not a simple sebaceous, was based upon the following points: (1) its deep situation (in the deep fascia); (2) its contents; (3) its structure; (4) its history.

(D) *Cyst of Auricle*. This was a large mass, the size of a small walnut, situated behind the auricles. It was removed from a male, aged twenty-three, by Dr. Wylie, having a history of seventeen years' duration.

The capsule was composed of compact laminae of white fibrous tissue, lined with stratified epithelium. The contents consisted of

epithelial squames (non-nucleated), with fragments of hairs, similar to the cervical cyst, and doubtless of the same nature.

The PRESIDENT remarked, with reference to Mr. Wingrave's case of cyst of the neck, that he had lately operated on a similar case in a male, aged forty-three. In his case the cyst was situated in front of the thyroid cartilage, and was attached to the isthmus of the thyroid gland. A duct lay between the cyst and a papilla on the base of the tongue, just behind the middle circumvallate papilla. From this point pus could be seen to issue when the cyst was pressed. It was obviously a persistent thyro-glossal duct. The whole sac was dissected out up to the mucous membrane of the tongue. The case went an aseptic course.

Dr. R. H. Woods delivered his presidential address.

GENTLEMEN,—My first and most pleasing duty is to thank you heartily for the great honour you have done me in electing me to fill the very important post of President of our Association. I assure you I am very sensible of how high a compliment you have paid me, especially in view of the fact that I live at a considerable distance from the scene of our activity, and from my brother office-bearers. I cannot hope to discharge the duties of my office with the same efficiency as if I lived on the spot, but you may rest assured that I shall not allow mere distance to interfere with my function in any avoidable way, and I shall at all times, to the best of my ability, endeavour to promote the welfare of our Association.

The choice of a subject for a presidential address is not an easy one. Custom forbids a discussion, so that controversial topics are virtually debarred, for it would be an obvious abuse of the chair to pervert it into a pulpit and deliver an *ex cathedra* address, while denying the privilege of deserved contradiction to the audience. Nor does it seem fair, if one adopts the alternative course of discussing things already established, to occupy the time of busy men by compelling them to listen to platitudes, however ingenious, or the obvious, however well concealed. The chief reason for an association such as ours is to afford an opportunity of comparing our ways and methods so that each may profit by the experience of others. Our speciality is young, and we are still pioneers, our field has no limit, and there is no finality to our art. It follows from this that though we are advancing in a body, yet each will have his small portion of ground better known to him than to his neighbour. It is at once his duty and his privilege to extend his

knowledge to his brethren, receiving theirs in return, as well as the benefit of their candid criticism if he appears to them to be working on wrong lines.

Nothing is so fatal to true progress as working alone. Without intercommunication with his fellows, the best man becomes provincial, if not parochial; he has no standard whereby to measure either himself or his methods, and, if he advances at all, it is only at an expenditure of energy quite disproportionate to the result obtained. From an economic point of view, therefore, membership of an association such as ours is of the first importance to men who want to keep abreast of the times. But this is not all. If we are to mature our judgment and develop our self-reliance in dealing with obscure and perplexing cases, intercourse with men who are wont to be similarly situated is essential. It is hardly necessary to labour the point, but I am sure we have all suffered from the inherent difficulties of border cases—that immense class where the dividing line between two opposite courses is indistinct. The old proverb that “two heads are better than one” has its justification here. It is often a matter of no small difficulty to decide where the normal ends and the pathological begins.

This is especially the case when the question of normality turns on the degree to which a condition is present. I shall mention adenoids, turbinal hypertrophies, and deflected septa, not as the most puzzling, but as the most elementary examples to illustrate my meaning. The transition from absolute normality to flagrant abnormality is often so gradual that the boundary between those cases needing treatment and those in which treatment is gratuitous must necessarily be somewhat arbitrary. And though in the end each must decide the question in a particular case for himself, his judgment will be helped by discussion with others whose opportunities of forming an opinion are quite equal to his own.

But when we come to consider the propriety of operating in a given case of cancer or sarcoma we can see, not only the difficulty attending border-line questions, but the magnitude of the issue that turns on our decision. At what point in the history of a given malignant tumour does it become inoperable? Here, again, the ability, the dexterity, and the pluck of the operator enter so largely that each must in the end decide the question for himself, but who will say that the sight of another man's success does not nerve and inspire him to attain similar ends, while the no less instructive cause of his failure will forewarn and forearm him against the dangers that beset his path? For reasons such as these it is a

duty as well as a privilege to belong to an association such as ours, not merely nominally, but actively, if we are to advance towards complete mastery in our craft.

It is pleasant to observe that within the last few years an improvement has taken place in the attitude of the profession at large to our speciality. Laryngology has advanced from tolerated dependence to a position in no way inferior to that occupied by any branch of the profession. That its development provoked a certain amount of hostility in men who could not see the necessity for its existence was natural enough. Nor is it surprising that they should have concentrated their criticism on certain operations the propriety of which is now unquestionable. Take the case of deflected septum. It is not, on the face of it, obvious why a deformity, especially if not visible to the naked eye, should be interfered with at all; and if some of the older practitioners could not see the precise way in which such conditions cause discomfort or disease, we cannot blame them for looking with a sceptical eye at operations for their remedy, nor need we wonder that the more censorious of them should have regarded the operator as of doubtful morality.

We must be tolerant of such scepticism. Scepticism is with us a duty, and we must not deny it to our critics. It is a quality too valuable and too scarce to be repressed, and if it now and again prevents us from embracing the truth with "Hail, fellow! well met" promptitude, it at least saves us from that open-mouthed acceptance of nostrums and fads which is the inalienable privilege of a free-born, if imperfectly educated and too credulous public.

A friend of mine on hearing of the wonderful result that followed the administration of some drug in a case of cancer of the stomach remarked, "You know, you can cure any disease if you only make a wrong diagnosis."

In our speciality, as elsewhere, the tendency of late years has been more and more towards the treatment of diseases by surgical means. For my part I am heartily of opinion that this is a step in the right direction. Not, indeed, that we have much choice in the matter; for while men are earnest the best method will beat others out of the field, so that sooner or later the question of what is the best method will be settled automatically. But pending that tranquil moment, we must try to show men the error of their ways when we find them trying to cure hypertrophic cases and cases of sinusitis by washes or snuffs, either of their own prescribing, or, what is more pernicious, because more weak-minded, the prescription of proprietary compounds. It seems only necessary to

advertise these proprietary articles with sufficient persistence in order to popularise their employment, while their number and evanescence are satires on our credulity. I do not, however, mean that because a drug is new and advertised, and proprietary, it is necessarily valueless. There is one brilliant exception—adrenalin, or its equivalent under other names. I think you will agree with me when I say that this is the most important addition to our list since cocaine. But even here, or rather particularly here, since it has such excellent qualities, it is necessary to say a word of warning against its indiscriminate use. The fact that it possesses the property of blanching mucous membranes has seduced people into prescribing it for use by the patient in inflammatory cases, especially acute rhinitis.

The reasoning is superficial; for a moment's thought will show us that this very inflammation which so annoys the patient is nothing more or less than the reaction of the tissues to bacterial invasion, and is, in fact, the very means whereby that invasion is repelled. The cause of inflammation may be a thing to regret, the thing in itself certainly is not, and to repress it artificially by means of such a drug as adrenalin can hardly fail to aid the bacteria in their attack on the tissue in question.

For this reason I have never used the drug for any except surgical purposes, but I have seen and heard enough of it in the practice of others to confirm me in my opinion.

Perhaps the most striking new feature of operative work in our speciality, and especially in the nose, is the magnitude of the operations performed under local anæsthesia. To the difficulty of administering a general anæsthetic through the seat of operation must be added the drawback that in the vast majority of cases the operator is robbed of the most valuable help he can have to the accuracy of the operation, viz. the co-operation of the patient. Hence the superiority of local anæsthesia when it can be employed, and hence also the increase, actual and relative, in the number and importance of the operations performed in this way. Now, anything that tends towards the comfort of the patient and the convenience of the operator during the progress of the work is too important to be neglected, and it seems to me surprising that the ordinary domestic chair, which was pressed into the service when the laryngoscope was first invented, should still persist in the all but universal way in which it does. For the last three years I have been using a dental chair, with one or two unimportant modifications. Among the more salient of its advantages are:

(1) The ease with which it can be raised and lowered to suit the patient to the operator; (2) the fact that the operator can get more intimately at his work; (3) the avoidance of any constraint in the operator's posture, a matter of no small importance in prolonged operations; (4) the rapidity with which the patient can be brought to the horizontal position in case of nervous or toxic syncope; (5) the patient's position is one of complete rest.

I have now fairly tested its merits both in private and hospital work, and I have no hesitation in saying that for operations such as resection of the septum, the extraction of polypi, or the intranasal treatment of sinusitis, it is as much superior to any laryngological chair that I have ever seen as a modern operation table is to a four-poster bed. I believe it only needs a little practical acquaintance to popularise its use as an aid to those operative methods in the treatment of disease which have advanced so rapidly in the past, and of which we have such promise in the future.

But while it is our first duty to cure disease, we must spare a thought and lend a hand for its prevention. We all know the difficulty of rousing people into taking steps to avoid or avert danger that we can sometimes clearly foresee. The waking up process is always an unpleasant one, and people prefer the attractions of a fool's paradise to the discomfort of a wise man's hell, and though a good deal is being done to prevent diseases of the throat and nose, more still remains. One of the commonest, as it is the most easily recognised, and the most easily prevented, causes of throat disease is oral sepsis. Neglect of the teeth by the patient is a fruitful source of this condition, but I do not hesitate to say that a more fruitful source is to be found in neglect of elementary hygiene by those incompetent dentists who fit artificial contrivances over septic areas.

In spite of what has already been done, public opinion, both lay and medical, still needs rousing on this important subject. People do not exercise their common sense, or they would cease to expect healthy throats, not to say bodies, to co-exist with dirty mouths. But even discovering the cause must not content us: we must get at the cause of the cause. We must ask ourselves why teeth are prone to decay and gums to inflame. These are vexed questions, but they are of national importance, and the sooner the correct answer is found the better for the race. It is no part of my function to-day to guess at the answer, but I may express my belief that the cause will be found to be very largely a dietetic one, especially of those years in which the teeth are being formed.

Of preventive medicine as applied to the ear there is little to be said, but that little is of the first importance.

We are still in blank ignorance as to how to avoid chronic middle-ear deafness. We are not in much better case with regard to deafness of auditory and internal ear origin. But when it comes to chronic suppurative otitis, our position is different, and I was glad to see the subject receive the attention it so well deserves at our section of the British Medical Association of this year, which I was unfortunately unable to attend.

It is now nine years since I first actively interested myself in the subject, and undertook an investigation into the relation of middle-ear disease to measles and scarlatina.

During the epidemic of 1896-97 I daily examined the ears of all such patients in the Hardwicke Fever Hospital. The number of patients was considerably over 300. I have seen no reason to modify the conclusion at which I then arrived, and which I shall quote from the *Dublin Journal of Medical Science* for January, 1898:

"A comparison made between any of these [specimens of pus from acute otitis in measles or scarlatina] and pus from a chronic suppurative case that had originated in an exanthem established the contrast that whereas in the acute condition there are really bacteria of more than one kind present in quantity (generally a diplococcus), in the chronic there are to be seen several—notably bacilli, spirilla, staphylococci, and streptococci—none of which are proper to the condition. This at once raises the suspicion that one or more of these latter forms gained entrance to the tympanum through want of proper precautions during the attack, and having established themselves there, kept up the flow of pus indefinitely, the variety which started the otitis having worn itself out. It requires but little consideration to show the likelihood of this, for the discharge acts as an excellent culture-ground, providing moisture and pabulum at the ideal temperature for growth and reproduction, and furnishes a track from the point of infection back to the tympanum, along which the microbes can extend at their leisure.

"From what I have observed, I have no doubt that this is what happens, and that it requires, in an ordinary case, little more than elementary cleanliness in order, by preventing this epi-infection, to insure that the inflammation may subside and the membrane heal in a few weeks, leaving the patient little, if any, the worse either in health or hearing."

Following this conclusion, the practice at the Hardwicke Hospital for the past nine years has been to thoroughly cleanse the ears by syringing with creolin lotion, in every case of measles and scarlatina, immediately on admission; in fact, it is regarded as part of the bath. Then if the ears suppurate they are syringed carefully and frequently, and filled once daily with a saturated solution of boric acid in 50 per cent. spirit. Since this plan has been adopted it has become quite uncommon for patients to leave the hospital with suppurating ears. This can hardly be mere coincidence.

Of course exceptional cases will occur when no precaution can prevent chronicity—tubercular cases, and those fulminating ones where the virulence of the inflammation is so great as to cause necrosis of bone; but we are probably well within the limit of truth when we say that these do not form 10 per cent. of the chronic suppurative otitis, and that the remaining 90 per cent. were at one time preventable. It is a matter of every-day observation that when a patient comes under treatment for acute otitis either in time for paracentesis, or directly after rupture of the drum, one seldom or never sees a chronic result.

The golden opportunity in such cases offers itself before any organisms other than those that started the inflammation gain access to the tympanum; if this is seized, and the meatus kept free from pus, one may expect the diplococcal infection which occurs in the vast majority of cases to heal in three weeks. I have known a mixed infection by *Staphylococcus aureus* and *albus* heal under the same treatment, but after a longer time.

I shall only touch on one other point, one that is elementary, but not trivial—the syringing of the ear. Syringing is no good unless it removes the pus from the meatus; it therefore behoves us to see that whoever does it really knows how it should be done. One or two failures or omissions may result in the calamity of epi-infection, especially in children and others who do not understand the importance of keeping their fingers away from the ear. An acutely suppurating ear, notwithstanding the fact that it is purulent, should be guarded from infection as jealously as an abdominal wound. Personally I am in favour of an alkaline solution, such as bicarbonate of soda, for use as a lotion, on the ground that it emulsifies the muco-pus better than a neutral or acid one, while for the antiseptic effect I rely on boric acid and spirit.

In conclusion, it may be remarked that while perhaps none of the points mentioned need be insisted on in a society of specialists,

yet until the truth of them is grasped as firmly in the general ranks of the medical profession, the repetition of them remains an imperative necessity.

Dr. DUNDAS GRANT proposed a hearty vote of thanks to the President for his most suggestive address. He desired to draw the attention of the Fellows in particular to the invaluable and laborious work carried out by Dr. Woods in regard to the prevention and treatment of acute suppuration of the middle ear in infectious fevers, and hoped that for the sake of those who were not acquainted with its details he would be induced to place reprints of the original article in the hands of the Fellows, feeling sure that they would find it instructive, practical, interesting, and most inspiring.

The vote of thanks was seconded by Mr. CHICHELE NOURSE, and carried unanimously.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundredth Ordinary Meeting, November 3, 1905.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

(Continued from page 670, Vol. XX.)

A CASE OF TUMOUR IN THE INTERARYTENOID FOLD, PROBABLY TUBERCULOUS, IN A MAN, AGED ABOUT FORTY.

Shown by Sir FELIX SEMON. The patient, a gentleman, aged forty, was sent to Sir Felix Semon by Dr. Crawford Watson, of Harrogate. Thirteen years ago he broke down with pulmonary trouble, went to South Africa, and lived there until a year ago, when he returned home. There was still harsh breathing posteriorly in the upper part of the left lung; there were a few tubercle bacilli in the sputum, but very little expectoration, and the patient was well in all other respects. Lately his voice became a little husky, and Dr. Watson discovered a swelling in the posterior part of the larynx, closely adjoining the posterior end of the right vocal cord. He wished Sir Felix Semon's opinion as to its nature, and as to the question whether the growth should be removed in view of possible tuberculous infection of the larynx from auto-inoculation from the wound thus caused.

On examination the exhibitor found a large longitudinal outgrowth of moderate hardness on the right side of the interarytenoid fold closely adjoining, but not connected with, the posterior end of the right vocal cord. The tumour was covered by normal mucous membrane. In all probability the growth was of the nature of a tuberculoma, although different in aspect to the tuberculous infiltration so frequently seen in the interarytenoid fold. As the tumefaction caused very little inconvenience, and as Sir Felix shared Dr. Watson's apprehensions with regard to infection from the wound, he recommended leaving it alone for the present and being guided as to whether it should be removed at all by the further progress of the case, but he wished to give the opportunity to the Society of seeing the rather uncommon condition of things.

Dr. DUNDAS GRANT thought this tumour was comparable to *verruca necrologica* which developed in those who made *post-mortem* examinations and which were usually slow tubercular growths; he thought the galvano-cautery might be applied, care being taken not to cauterise the adjacent portions of the interarytenoid space for fear of causing such cicatricial contraction as to prevent the arytenoid cartilages from diverging during inspiration.

Dr. DE HAVILLAND HALL said that he would not have made the diagnosis of the growth as being tuberculous in nature. He had never seen so isolated a growth in tuberculous disease of the larynx. To him it looked more like a fibroma than a tuberculoma. It was quite clear that operative interference was not advisable.

CHRONIC THICKENING AND DEFORMITY OF EPIGLOTTIS AND VOCAL CORDS OF FOUR YEARS' DURATION IN A GIRL AGED SIXTEEN; FOR DIAGNOSIS.

Shown by Dr. DONELAN.

Mr. DENNIS VINRACE remarked that, with regard to the suggestion that the patient was the subject of either hereditary or acquired syphilis, her comely appearance and general physical condition and the absence of signs were not in harmony with the victim of syphilis throughout life. If the laryngeal ulceration were due to syphilis, it was of the acquired variety.

Mr. BARWELL said that the nodular infiltration of the epiglottis, the type of patient affected—in fact, the entire aspect of the case—was typical of lupus of the larynx.

Dr. PEGLER had also come to the conclusion that this was a case of lupus, for which the best treatment would be constitutional by a course of arsenic.

Dr. WATSON WILLIAMS said that in view of the probability of this being a case of lupus, he suggested the desirability of trying the administration of tuberculin in repeated small doses, just sufficient to produce slight reaction, and continuing it for some time, as he had found gratifying results from the use of this remedy, which in his opinion might with

advantage be resorted to more frequently, especially in such cases as this, where, from the deposit being none too limited, surgical procedure would be somewhat extensive before complete eradication could be anticipated.

Dr. DONELAN, in reply, said that while there were no grounds whatever to think there was any acquired syphilis, as the patient was taking a mixed antisyphilitic treatment in view of a possible congenital taint when he first saw her, he had continued that treatment for a time, especially as there was a considerable diminution in the size of the proliferations, with consequent improvement in voice. He discontinued it, however, in July, when the patient went to France. On her return lately he looked on the case as one of lupus, and commenced treatment by arsenic, but had not yet had an opportunity of pushing the dose. He would use tuberculin if the arsenic did not produce a good result.

A POINT IN THE DIFFERENTIAL DIAGNOSIS OF EXCRESCENCES IN THE INTERARYTENOID SPACE.

Dr. JOBSON HORNE exhibited a series of photographs of macroscopic and microscopic preparations to illustrate a means of discriminating tuberculous excrescences in the interarytenoid space from those of a non-tuberculous nature. Dr. Horne said the excrescences in the interarytenoid space, with which more commonly they were concerned, were of one kind, but occasioned by different agents, and the diagnosis which they were more usually called upon to decide was whether the excrescences were of a tuberculous, simple, or syphilitic nature, and of these the most common were the tuberculous and the simple variety. Both were brought about by pachydermatous changes in the epithelium—that was to say, the epithelium underwent a hyperplasia and a metaplasia. The point to which Dr. Horne wished to draw attention was that in the simple variety (*pachydermia verrucosa simplex*) the excrescence was an exaggeration of pre-existing parts, so that the natural central furrow in the interarytenoid region was maintained in the growth, which was a symmetrical one, occupying the centre of the interarytenoid space. In the tuberculous variety (*pachydermia verrucosa tuberculosa*) the growth did not occupy a central position; it was usually developed more on one side of the space, and the central furrow was lost.

MULTIPLE PAPILLOMATA OF THE LARYNX IN A MAN OF FORTY-ONE, WHICH HAD RECURRENT AFTER THREE YEARS' TREATMENT ENDING FIFTEEN YEARS AGO.

Dr. SCANES SPICER showed this case of ulcerating warty masses

covering the whole interior of the larynx and the under-surface of the epiglottis. The nature was unequivocal fifteen years ago, simple papilloma, with no evidence of tubercle, or malignancy, or syphilis. Now, these possibilities might again demand consideration. The histological examination of parts removed that week again showed papilloma, but his study of the case was as yet not completed. He was doubtful whether, owing to the extremely diffused character of the mass and the readiness with which it bled and interfered with operative removal, the poor general state of the patient's health, and the importance of the time factor, it would not be better to perform laryngo-fissure and remove the diseased tissue. This was totally opposed to his general principle and practice in papilloma, but if ever such a course was justified, this case appeared to be a suitable one for the procedure.

[In conversation on the case, after examining the larynx, Dr. STCLAIR THOMSON regarded it as tubercular, because the growth and ulceration had extended to the epiglottis. Sir FELIX SEMON thought it would be better to attack it through the mouth after combined chloroform and cocain anæsthesia.]

Dr. DUNDAS GRANT thought there was great suspicion of the disease being really tubercular, and that before the performance of any operation, such as thyrotomy, this diagnosis ought to be carefully considered and, if possible, excluded.

Dr. WATSON WILLIAMS said that he could not help feeling that the appearances presented were very suggestive of laryngeal tuberculosis, the more especially as there was considerable swelling and infiltration in the arytenoid regions. He thought, too, that the appearance of the patient and the fact that the pulse-rate was over 100 pointed in this direction. While, of course, all felt difficulties in diagnosis of such cases, and it was quite possible the appearances were to some extent modified by the recent local treatment, the existence of tuberculous disease should be excluded before operative measures were resorted to.

Dr. FITZGERALD POWELL thought that the first thing to be done was to make the diagnosis certain and exclude the possibility of tuberculous laryngitis by the examination of the sputum, etc. At the same time, no time should be lost in clearing the man's larynx of the growth and giving him breathing space. This could be easily done through the mouth with Mackenzie's forceps. He would strongly oppose opening the larynx. He had had considerable experience in these cases, and had found that the growths could be well kept down and eventually stopped growing by the interlaryngeal method. The removal of these growths by thyrotomy was no more efficacious in preventing their recurrence than the other method, and was more likely to injure the voice.

Dr. JOBSON HORNE said it was difficult to lay down any hard and fast rule for the treatment of papillomata in the larynx. One had to take into consideration the age of the patient and the amount of the dyspnoea. Dr. Horne cited the case of a child, aged eighteen months, in whom tracheotomy had to be performed for the relief of dyspnoea

prior to the case coming under his care. The larynx was found to be packed with papillomata. In order to get rid of the tracheotomy tube there was no alternative course to performing a laryngo-fissure for the removal of the growths. This he had done, and the child was now able to breathe *per vias naturales*.

A CASE OF SUBACUTE OSTEOMYELITIS OF FRONTAL BONE, WITH EMPYEMA OF RIGHT FRONTAL SINUS, SHOWN ON MAY 5, 1905.

Dr. SCANES SPICER showed this patient again, as he had recently presented himself with a great increase of the bulging projection of bone into the orbit and also round the trephine hole over the brow. There had been considerable headache, and every two or three days a small muco-purulent scab from the right nose. The patient had used mercurial inunction and potassium iodide internally up to two months ago, but since then had taken nothing. He reiterated his denial of any injury to the brow or nose, and likewise as to any specific history, of which no stigmata were to be detected. Ten grains of potassium iodide thrice daily over the last four days had, however, caused a rapid shrinking again of the bony swelling.

One Hundred-and-first Ordinary Meeting, December 1, 1905.

Vice-President, Dr. WILLIAM HILL, in the Chair.

The following cases, specimens, and drawings were then shown.

REPORT OF MORBID GROWTHS COMMITTEE.

Mr. Smurthwaite's specimen of (?) Malignant Disease of Larynx, June, 1905.¹ The small fragment presented for examination showed nothing suggestive of malignant disease either of the epithelial or mesoblastic tissues.

Mr. de Santi's Case (?) Malignant Disease of Esophagus, March,² 1905. The Committee considered that the specimen showed no evidence of the case being carcinoma or epithelioma.

Mr. de Santi's Case of Malignant Disease of the Nose, November, 1905.³ The specimen was one of round-celled sarcoma.

Dr. Dundas Grant's Case of Malignant Disease of the Antrum, November, 1905. The specimen was one of columnar-celled carcinoma.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 384.

² JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 286.

³ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 670; vol. xx, p. 662.

SPECIMEN OF A RHINOLITH.

Dr. WATSON WILLIAMS showed a specimen of a rhinolith removed from a female patient. She had had purulent discharge from the left nasal passage anteriorly for two and a half years, with cacosmia and headaches, the latter usually central frontal and sometimes occipital also. The discharge, smell, and the headaches entirely ceased with the removal of the rhinolith. On section, it showed a nucleus that looked like a dirty small piece of cotton-wool. The concretion was composed mainly of phosphate of calcium.

Mr. CRESSWELL BABER asked how long the rhinolith had been in the nose, and whether there was any dilatation of the nasal cavity. In a case of his own there was considerable dilatation, the septum being pushed to the opposite side, and the cheek on the affected side bulged out. The patient was a child, and the nucleus consisted of a plug of rag. In another similar case a boot-button formed the nucleus. It was that of a medical man. The rhinolith was removed, and a boot-button found in its centre, which the patient remembered putting into the nose when three or four years old.

Mr. DE SANTI said he had had a similar case at the hospital. A woman at forty-two came with a large, loose body in the inferior meatus of her nose, which had caused considerable ulceration and a discharge of pus. It felt very rough, irregular, and hard, and he took it to be a piece of necrosed bone, but could not find out whence it came, there being no lesion to account for a sequestrum. He tried to extract it, but it was too large, and he told the patient to come again the following week. Then, finding it could not be removed from the anterior naris, an attempt was made to push it back, and it passed into the naso-pharynx, from whence it was easily removed. She had had symptoms four years, but could not recollect having put anything into her nose. When the specimen was examined by the curator of the museum he found the nucleus to be a cherry-stone, which probably had been pushed up during childhood. Probably no inconvenience was felt until various substances became deposited on it. Headache was a prominent symptom, and there was also giddiness.

Dr. JOBSON HORNE said he had had under his care a case similar to the one described by Mr. de Santi, in which previously dead bone, the result of syphilis, had been diagnosed, and the patient had undergone a course of anti-syphilitic treatment without improvement. A rhinolith was found and removed, and the case at once cleared up. The nucleus of the rhinolith was cotton-wool. Some years previously polypi had been removed from the same nostril.

Dr. WATSON WILLIAMS, in reply, said that although there was always a nucleus, in such cases it was often only micro-organisms or natural secretion, such as in bronchololiths. There was dilatation of the nasal chamber but no deviation of the septum; it was the inferior turbinal which suffered. It was interesting to hear of the association of headache in most of the cases.

CASE OF TUBERCULOUS ULCERATION OF THE NOSE, HEALED UNDER TREATMENT.

Shown by Mr. H. BARWELL. The patient, an unmarried woman, aged twenty-nine, was shown before the Society in June, 1905.¹ There was then an ulcer of characteristic tuberculous appearance on the left anterior part of the septum, and a smaller ulcer opposite on the outer wall, as well as a soft granular patch on the left middle turbinal, which bled readily when touched. There was definite pulmonary phthisis, which had since progressed rather rapidly, and lately there had been hæmoptysis. She was treated as an in-patient at the Mount Vernon Hospital by the open-air method, and a mixture of lactic acid, formalin, and carbolic acid was rubbed in daily. In August the ulcers were completely healed, a white scar marking the site of the septal ulcer. The condition remained unchanged. A gloomy prognosis had been given when the case was first shown before the Society.

Dr. STCLAIRE THOMSON asked how one was to distinguish between tubercular ulceration of the nose and lupus of the nose. The fact that the patient had phthisis did not justify calling the nasal condition tuberculous. One knew that tuberculosis and lupus had, pathologically, the same foundation; but clinically it was easier, with some experience, to distinguish between lupus and tuberculosis in the pharynx or larynx than in the nose. In 1897 he showed a case in which there was distinct lupus in the larynx, but the patient had tubercle bacilli in the lungs.² In 1897 Dr. Watson Williams showed a young woman with what appeared to be tuberculoma of the septum, a bluish tumour, and it was shown with drawings and specimens.³ Under Dr. Watson Williams she was treated in Bristol Infirmary, and reacted violently to tuberculin. He (Dr. Thomson) saw her later in London, and showed her at the Clinical Society, after which he found he was honoured in foreign literature as showing the first case of tubercle of the nose recorded in English literature. That was a double mistake, because Dr. Watson Williams was the first to show the case, and, secondly, because it was not tubercle, for she now had typical lupus of the nose. A great deal of the septum was lost, and the disease had slowly spread over the turbinates. But the patient was in a fine condition of general health, and was now a healthy woman at twenty-eight, and married. Therefore he was inclined to agree with what had recently been said by Escat,⁴ namely that the only form of tubercle met with in the nose was lupus. It was generally agreed that acute tuberculosis of the pharynx—that rare but very painful disease—was unknown in the nose. The question he wished to raise was whether tuberculous ulceration in the nose, even in a phthisical patient, was not always lupus.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 382.

² *Proceedings*, February, 1897.

³ *Proceedings*, April, 1897.

⁴ *Annales des Maladies de l'Oreille*, vol. xxxi, No. 10, 1905.

Dr. WATSON WILLIAMS said he had been interested to hear the upshot of his own case referred to by Dr. StClair Thomson. He thought it was an excusable mistake to call it tuberculoma instead of tuberculosis. He considered it was still an open question whether lupus was pathologically identical with tuberculosis.

Dr. JOHNSON HORNE said that if the larynx was free that would be further evidence of the lesion in the nose being lupus, because lupus spread downwards and tubercle upwards, as Escat had pointed out in the paper referred to by Dr. StClair Thomson.

Mr. BARWELL, in reply, said that it was difficult to answer questions on such a thorny subject. There was no tubercular affection of the larynx. He was aware of Escat's paper, and knew that opinions differed on the subject as to whether lesions in the nose should always be called lupus, or whether tuberculosis could be distinguished. The case shown recalled to Mr. Symonds his own case, as it looked very similar. It was one of pure ulceration, rather deep, excavated, without any cicatrization in one part, and without nodules or any large formation of granulations. That, with the rapidly advancing phthisis, made the diagnosis of tuberculosis more justifiable as distinct from that of lupus. Many regarded the prognosis of that case as bad, and now that it had healed it was not surprising to find a greater inclination to accept the diagnosis of lupus. No one in June suggested it was lupus. One could only accept the result as a criterion and call it lupus because it had healed. No bacilli were found, but scattered atypical giant cells.

CASE OF LUPUS OF THE LARYNX AND UVULA, HEALED UNDER TREATMENT.

Shown by Mr. BARWELL. The patient, a girl aged fifteen, was first seen in March, 1905; the epiglottis was thickened, the characteristic nodules extending along the right ary-epiglottic fold, with redness and ulceration of the cords; the uvula was also affected. He proposed to treat the case with frictions of lactic acid and formalin, and to excise the epiglottis if necessary. Whilst the patient was awaiting admission, the condition improved so much under arsenic that no local treatment was employed, and under good food, open air, and arsenic, the lesions had apparently healed. The nodules had mostly disappeared without ulceration, leaving the peculiar pitted appearance which had been described by McBride.

Dr. STCLAIR THOMSON said Mr. Barwell stated that the condition had healed without local treatment, though he admitted he had not seen the case recently. It was not completely healed, as apple-jelly spots were visible on one arytenoid and on the epiglottis. It showed how sceptical one ought to be before claiming results. He could show two patients who had entirely lost their epiglottis, evidently from lupus which had completely healed. The patients were unconscious of anything the matter with themselves, and had had no treatment. If they had been under treatment it would have been easy to attribute the result to the treatment. In such cases as Mr. Barwell's, where the condition hung fire, he strongly

recommended the galvano-cautery, especially in the case of people who could not afford prolonged and expensive treatment.

Dr. JOBSON HORNE said that some years ago, whilst house-physician at St. Bartholomew's Hospital, and subsequently whilst casualty physician, he had examined the larynx in all cases presenting lupus of the face. In 9 per cent. of such cases the larynx also presented evidence of lupus. The striking point of the investigation was that symptoms referable to the larynx were so often absent when that organ was also involved.

Mr. BARWELL, in reply, said he had been very careful to say "healed *under* treatment," not "by treatment," but he thought treatment had something to do with it. The case was getting rather rapidly worse when first seen, and hoarseness was increasing, and there was a rapid improvement after commencing treatment, but he could not claim that even open-air treatment, good food, and arsenic would produce a cure in any large proportion of cases. He was not aware there was any ulceration remaining now, but he had not seen the case recently. There were one or two apple-jelly nodules on the uvula and on the arytenoid, but compared with the condition months ago, there was a remarkable improvement.

CASE OF SYPHILITIC GRANULOMATA AND STENOSIS OF THE LARYNX. THYROTOMY PERFORMED.

Shown by Mr. DE SANTI. The patient was shown by Mr. de Santi in November, 1902; the symptoms were hoarseness, slight pain, and difficulty in breathing. Both vocal cords, especially the left, were the subjects of chronic inflammation. On the left cord was a large, firm, red, sessile outgrowth; in the interarytenoid space was a large swelling, presenting cicatricial changes. The patient had been under Mr. de Santi four years previously for secondary syphilis, and amongst other manifestations had syphilitic laryngitis. He attended fairly regularly for about nine months and was then lost sight of. Subsequently he had been under Dr. Powell, who made several ineffectual attempts to remove the excrescence endolaryngeally. He had been treated with large doses of iodide.

When exhibited before the Society the case was mixed up with another shown by Mr. de Santi for pachydermia laryngis, and no suggestions were made as to operative treatment. Mr. de Santi at the time was of opinion that laryngo-fissure should be done and the growths and cicatricial tissue cleared away. The patient was advised to that effect, but refused operation. His breathing, some months later, became so embarrassed that he consented to have the operation performed.

Mr. de Santi therefore performed thyrotomy, and removed the growth attached to the left cord and the cicatricial tissue in the intra-arytenoid space. The patient made an uneventful recovery,

and was now brought before the Society to show the result. His voice was excellent, and so also was his breathing. The growth removed from the left vocal cord was shown. It was as large as a small walnut, and consisted of exceedingly tough tissue. Mr. de Santi had come across several cases of tertiary syphilitic affections of the larynx characterised by multiple nodular out-growths as well as the more common cases of syphilitic stenosis due to old ulceration and subsequent cicatrization, and was of opinion that in most of them laryngo-fissure should be performed. In the cases he had operated on the results had all been good.

SCLEROTIC HYPERPLASIA OF THE PHARYNX AND NASO-PHARYNX.

Shown by Dr. BROWN KELLY. The patient was brought to Dr. Kelly in August, 1899, on account of enlargement of the uvula. He was then thirty-four years of age. For about eight years he had been subject to slight attacks of sore throat, and for three he had experienced gradually increasing discomfort, sometimes amounting to "choking fits," due to the uvula either coming forward on the tongue or passing down behind the epiglottis. In addition, nasal respiration had been partially obstructed for a year.

On examining, the uvula was found to be greatly increased in all its dimensions, and to conceal the parts behind. The posterior wall presented a narrow tract of apparently normal tissue running down the middle, and a broad, prominent band on each side, passing upwards into the naso-pharynx, and downwards towards the larynx, and extending outwards so as to incorporate with it the corresponding posterior faucial pillar.

Examination of the naso-pharynx, which was only possible after uvulotomy, revealed a great reduction in its lumen. This was due partly to thickening of the soft palate, and partly to the continuation upwards over the posterior-superior wall of the broad bands just referred to. The thickening on the roof was least in the middle and most marked at the sides.

In the laryngeal mirror the bands on the posterior wall of the pharynx were seen to pass downwards, and to overhang the arytenoids and posterior parts of the vocal cords.

The thickenings in all these situations were pale, smooth, and moderately firm.

The greater part of the uvula was removed and since then the patient had considered himself cured.

From the tissue removed sections were prepared, one of which was exhibited. The microscopic appearance had been described and the case reported in the 'Lancet,' April 6th, 1901. Dr. Ferguson, Professor of Pathology in the Medical School, Cairo, summarised the whole condition, from the point of view of its morbid histology, as a chronic hyperplasia of the interstitial tissue of the parts involved, of apparently progressive character, with no tendency towards degeneration, and unassociated with the presence of any specific micro-organism.

The patient's personal and family history threw no light on the origin or nature of this affection. No relation to rhinoscleroma, tertiary or hereditary syphilis, or tuberculosis could be established.

The changes that had taken place in the past six years altogether amounted to a slight increase in the roominess of the naso-pharynx and a diminution in the size of the uvula and of the right lateral pharyngeal band.

Dr. DUNDAS GRANT said it was a very interesting, but puzzling, case. It seemed to resemble some of the cases of indeterminate chronic oedema of the larynx, of which several instances had been shown before the Society. He had exhibited one such, with a gigantic infiltration of the ary-epiglottic folds, with swelling of the epiglottis, and no one seemed able to give any explanation of the condition. One could eliminate syphilis and tubercle, and when Dr. Hajek was in London he suggested it might be a form of lymphadenoma, and that arsenic would be a suitable treatment. But if his (Dr. Grant's) interpretation of the histological report in Dr. Kelly's case was correct, there seemed to be no connection with such a condition.

Dr. PEGLER said he should like to see a section which supported Dr. Brown Kelly's diagnosis of sclerosis a little more fully. The specimen on view showed rather an oedematous condition of the stroma, and no fibrous tissue. It was stained with methyl blue without a counter-stain, and apparently for micro-organisms. He agreed with Dr. Grant that the clinical appearance pointed rather to an oedematous condition of the tissues.

Dr. SMURTHWAITE said he had had a case of nasal polypi; there was in addition to the polypi what he took to be a boggy mass high up on the septum—from which it was growing—on a line with the anterior end of the middle turbinal, having no connection with the latter. Under an anæsthetic he removed the polypi and a large piece of this mass, which was practically hard fibrous tissue. A section under the microscope showed there was mucous membrane with marked increase of fibrous tissue. Could Dr. Kelly's case not be of a similar nature?

Dr. BROWN KELLY, in reply, said he would be pleased to accede to the suggestion of Dr. Pegler, and, if desired, refer the specimen to the Morbid Growths Committee. Sir Felix Semon recently wrote a paper on the subject, and referred to three cases observed by him, and to the case shown to-day, all of which were apparently of the same nature. Sir Felix Semon took exception, however, to the word "sclerotic" in the term applied to the affection, but he (Dr. Kelly) believed that the clinical course and histological appearances justified its use.

Two beautiful sketches of multiple telangiectasis of the skin and mucous membrane of the nose and mouth were shown by Dr. Brown Kelly.

CASE OF CHRONIC PHARYNGITIS WITH POLYPI OF UVULA.

Shown by Dr. PETERS. A. H—, aged seventeen, cashier, had suffered with chronic pharyngitis and rhinitis for three years. During this time she noticed that her uvula was much elongated. Occasionally during deglutition it troubled her; otherwise its presence was not noticeable. The uvula was in all $1\frac{1}{4}$ inch in length, and somewhat cedematous. The proximal inch contained muscular tissue, and the last $\frac{3}{4}$ inch terminated in a papillomatous-looking mass $\frac{1}{4}$ inch in diameter. There was also a smaller similar excrescence $\frac{1}{2}$ inch in length at the junction of the uvula with the soft palate. Usually the main appendage clung to the right anterior pillar and curled up in the right glosso-epiglottic pouch.

Dr. DUNDAS GRANT remarked on the absence of inconvenience from such a gigantic uvula. A similar case had been previously shown, and he had seen one or two in his own practice, with a long uvula, which seemed to tail down into the glosso-epiglottic vallecula, and almost into the hyoid fossa, but producing no discomfort. Doubtless the parts became habituated to the perpetual contact. If Dr. Peters were to remove a small part of it, it would be interesting to know whether the patient felt such disturbance as often accompanied the more moderate degrees of elongation of the uvula.

Dr. H. J. DAVIS said that two years ago he showed a case in an old man where the uvula was so long that it practically hung like a pigtail into the glottis. As there was no discomfort from it—the patient very infirm—he left it alone. He had observed that if the uvula was very long and pendulous there was often not much discomfort, but should it happen to be a little longer than usual there was often a great deal. In such cases there was often trouble in the nose in the form of nasal obstruction, and if that were attended to the uvula would sometimes shorten of itself. He looked upon it as an indication of nasal obstruction. The present case with the polypi was very unusual.

Dr. PEGLER described a peculiar abnormality of the uvula which he had recently seen in his clinic. The body of the uvula was rather long to begin with, but was joined by a thread-like connection a quarter of an inch long to an oblong body about the same length. In spite of the curious excursions of this growth with every movement of the soft palate the patient was unconscious of its existence and had no symptoms attributable to it.

Dr. WESTMACOTT said if removal was decided upon it might be well to deal with the tonsils also.

Dr. PETERS, in reply, said he used the term polypus because he thought it consisted principally of fibrous tissue. He proposed to remove it and have sections cut.

CASE OF SWELLING OVER THE LEFT SUPERIOR MAXILLA IN A MIDDLE-AGED WOMAN (formerly shown).

Shown by Dr. DUNDAS GRANT. Since the last meeting the patient had continued to take anti-specific remedies with regularity. There was free discharge from the nose, but the swelling over the superior maxilla had diminished considerably, and the patient subjectively much relieved; although the numbness of the lip had not entirely disappeared, it was less than formerly. There was decidedly less infiltration of the skin over the swelling, and, under the circumstances, the exhibitor thought that the Society would consider him justified in still delaying operation.

Mr. DE SANTI said the experience mentioned by Dr. Grant was not uncommon. The pathologist not infrequently reported that the condition was malignant, yet the disease cleared up under iodide of potassium. Or he would say it was syphilitic and it turned out to be malignant. Some time ago a man under Mr. de Santi's care had a growth of the external auditory meatus, which was clinically a typical epithelioma. He excised a large piece and sent it for examination, and received the laconic answer, "epithelioma." The man had secondary syphilis at the time. The condition had come on much more rapidly than malignant ulceration would, and there was an absence of enlarged glands. A week after the administration of mercury and iodide of potassium the patient returned with the growth half its former size. If he had not been in the hospital it would have been regarded as cancer. The growth was a huge condyloma. In March he showed a woman with epithelioma of the larynx and pharynx, which had been pronounced simple; but the woman was now dying of carcinoma.

Dr. PEGLEE said that the Morbid Growths Committee had very carefully considered the specimens submitted to them, and both of them, especially Mr. de Santi's case, presented considerable difficulty. In the latter case they could only speak from the specimens of tissue under consideration, which they ultimately concluded were not carcinomatous, whatever might be the clinical behaviour of the growth. Dr. Grant's case was a fairly typical papillomatous spheroidal cell carcinoma, of which other specimens, malignant in character, were in the cabinet.

Mr. WAGGETT said that the specimen was similar to others he had seen which ran a malignant course.

Dr. WESTMACOTT said he had three similar cases, in which the clinical and pathological diagnoses were at variance. One was constantly encountering the same difficulty with regard to morbid growths, even where examinations were made by skilled pathologists at more than one centre. There should be a more definite scheme, either for getting a more suitable piece of tissue for examination or for having a more definite form report.

Dr. DUNDAS GRANT, in reply, said he felt justified in watching the case a little longer; possibly it might even yet confirm the report of the pathologist. It would be a great matter if the sections which had been before the Society for some time as doubtful cases could be brought up and reconsidered in the light of their subsequent histories, if these could

be obtained, so that the morbid anatomy of those parts could be better established. The pathologist realised that there were microscopical as well as clinical difficulties in diagnosis. Dr. Grant asked whether the Committee thought the microscopical appearances in this case so absolutely typical as to exclude all doubt.

A CASE OF TERTIARY SYPHILIS OF THE LARYNX.

Shown by Dr. G. C. CATHCART.

Mr. DE SANTI said he had had a few such cases at different times, all of which he operated upon because of their trouble in breathing, by laryngo-fissure. The present patient would be well advised to have her thyroid split, the growths removed, and the parts trimmed up, especially using Waggett's thyrotomy cutting forceps. The ultimate result would be most excellent.

RECENT NASAL POLYPUS AND SINUSITIS IN A PATIENT WITH LONG STANDING ATROPHIC RHINITIS.

Shown by Dr. WILLIAM HILL.

Dr. WATSON WILLIAMS said the two conditions became associated but were not interdependent. It was difficult to know what to do. He had a case of atrophic rhinitis in whom he had opened both antra and washed them out for a long period. But the patient went to someone else, who did a double radical antral operation. This patient was good enough to return and show himself as cured.

Mr. WAGGETT did not think the case to be one of atrophic rhinitis.

Mr. STUART LOW said that he had recently had a similar case in private, the patient being a lady aged fifty years. She complained of excruciating pain in the area supplied by the infra-orbital nerve. Polypi were found in the opposite nostril. Antral transillumination on the painful side showed only partial dimness. There was no pain on pressure on the antral wall, but on pressing the finger upon the floor of the orbit downwards considerable pain was elicited. He was undecided whether to perform evulsion of the infra-orbital nerve or a radical antral operation. He, however, preferred first to explore the maxillary antrum, and found it packed with soft mucous polypi. There had been no recurrence of the severe pain, and the cure was complete. There were no crusts in the nostrils, but only a condition of rhinitis sicca. He could not find any crusts in Dr. Hill's case.

REPORT ON THE FATAL TERMINATION OF THE CASE OF INCRUSTATIONS IN THE TRACHEA, WITH AT TIMES WELL-MARKED STENOSIS; SHOWN BY DR. EDWARD LAW AT THE MEETINGS OF THE SOCIETY ON NOVEMBER 4 AND DECEMBER 2, 1904, AND MARCH 17, 1905, AND DULY REPORTED IN THE "TRANSACTIONS."

Dr. Edward Law saw the patient on May 30 after a visit to the seaside of seven weeks' duration. The general health was good,

but the difficulty in breathing continued and varied in intensity. The crusts in the trachea were less marked than usual. The patient returned home, and the following communication was written by her aunt :

"After seeing Dr. Law on Tuesday, May 30, the patient remained in her usual health until Saturday morning, June 3, when she had breakfast about eight o'clock. She laughed and talked to her sister for some time and then went to a boxroom and knelt down to look in her trunk, asking a little girl who was with her to go away. The patient immediately followed the child and put her arms on her aunt's shoulders, looking at her as if she wished to say she was choking. The mouth was wide open, but she was quite unable to speak, and instantly became discoloured. The eyes rolled, the teeth were set, and the throat was hard and rigid. She neither struggled nor made a sound, and was dead before her uncle could reach her, although he was only at the bottom of two small flights of stairs."

The aunt considers that under no circumstances could anything have been done, as it all happened so very suddenly, the time from speaking to her little girl until the patient was dead being scarcely two minutes.

Dr. Law asked the members not to confuse this case with the one of excrescences, incrustations, or chalky deposits low down in the trachea shown by himself at the meeting of the Society on May 2, 1902, and at the annual meeting of the British Medical Association in Manchester on July 30, 1902.

REPORT BY DR. G. C. CATHCART.

Post-mortem examination was made three days after death. The whole corpse was swollen, owing to *post-mortem* decomposition, the features being unrecognisable and the neck obscured behind the swollen chin and breast, which met in front of it. Blood and mucus were exuding from the mouth and nostrils; the general aspect resembled that of a death from drowning. The larynx and trachea were removed *en masse* through the usual median incision, and preserved in 5 per cent. solution of formalin. No other organs were examined, permission for a partial autopsy only having been obtained.

REPORT BY DR. JOBSON HORNE.

For the opportunity afforded to us of seeing the larynx and

trachea, we are indebted to Dr. G. C. Cathcart who performed the autopsy.

The larynx with the trachea was removed seventy-eight hours after death. It was found to be occupied with a membranous material which was present in sufficient quantity to account for death. Owing to the advanced *post-mortem* changes it was impossible to conduct usefully any bacterioscopic or histological investigation with a view of ascertaining the nature of this material. The specimen had to be placed immediately in a strong solution of formalin. When hardened it was opened in the usual way, and presented to the naked eye no morbid appearances apart from those due to *post-mortem* changes.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Twenty-third Ordinary Meeting, held at the Medical Society's Rooms, No. 11, Chandos Street, Cavendish Square, W., Monday, December 4, 1905.

The President, Dr. THOMAS BARR, in the Chair.

VALEDICTORY ADDRESS.

BY THE PRESIDENT.

GENTLEMEN,—I shall ever look back with pride to the honour you conferred upon me two years ago in electing me as your President, an honour which was renewed a year ago. To be found on the roll of Presidents of the Otolological Society of the United Kingdom will be, in my opinion, to occupy no mean place in the annals of our profession.

During these two years, gentlemen, we have not simply been marking time: we have, I venture to say, been moving forwards. The Society has continued to exhibit all the vitality and enthusiasm of youth. At our ordinary meetings there has been no lack of excellent papers and demonstrations, also clinical and pathological material; indeed, it was usually difficult to overtake the entire programme of work. The discussions have, as a rule, been profitable and characterised by a sufficient amount of keenness and liveliness. The Council has been much occupied in deliberating on matters of very considerable moment. The extra-metropolitan meetings in Glasgow and Manchester were notable features of the

Society's work—proving the wisdom of having an annual meeting outside London.

The idea of founding a permanent museum in connection with the Society, which was broached at our annual dinner a year ago, has now taken definite shape, and it is hoped that such a museum will eventually constitute an important feature of this Society. Organised pathological research is also in the air, and I believe the future has in store for us important service in this direction.

Gentlemen, I think it is meet and proper that I should here refer to the loss by death of two of our number during these two years. Dr. McKeown, of Belfast, who was elected a member of this Society in 1902, died on July 9, 1904, and Dr. Farquhar Matheson, who was an original member of the Society, passed away on August 23 last. Dr. McKeown was rarely able to attend on account of the distance as well as his much occupied life. I met him occasionally in Belfast, and recognised in him a man of marked individuality, a fearless exponent of what he regarded as right, and much interested in his work. Dr. Matheson was better known to most of us; indeed, he was a very familiar figure at these meetings, much and very widely esteemed, and keenly interested in the work of the Society. We mourn and regret the death of these colleagues, and in regard to each *requiescat in pace*.

Looking to the future, gentlemen, I trust that the desire for progress will continue to stir the minds of the members of this Society, that with those of you who possess the talent for research that talent will not be wrapped up in a napkin, but put to use. Otology presents a great field for further research. The path may be somewhat weary and oftentimes discouraging; the immediate fruit may appear scanty, but he who seeks knowledge for its own sake will be rewarded. In any case, let us keep before our eyes the good of science, the advancement of otology, and the benefit of humanity.

In vacating the chair, I am conscious of many shortcomings during these two years, and I believe that in going so far afield for your President you have been placed, for the time being, at a disadvantage, which you have borne with in the kindest and most considerate way. If my presidential period marks the initiation of any useful expansion of our work, I would consider myself fortunate indeed.

Whilst ceasing to be your President, I shall not cease to take an interest in the affairs of the Society, and, in the rôle of a member of Council or an ordinary member, it will always be my aim

to advance the interests of the Society and to promote its usefulness. I have a good example in my immediate predecessor, whose interest in the Society has never waned. Allow me to thank you, gentlemen, for all your consideration and kindness to me during my two years of office.

THE PREVENTION OF EAR AFFECTIONS DUE TO EXPOSURE TO LOUD NOISES AND TO EXPLOSIVES.

BY ARTHUR H. CHEATLE.

I wish to draw the attention of the Society to the ear affections due to exposure to loud noises and to explosives with a view to their prevention.

The nerve-deafness due to the first cause is, as is well known, especially rife among boiler-makers. The number of men affected must be large, and is worthy of investigation by the Society. Dr. Barr investigated the affection among a certain number of boiler-makers in Glasgow, and he read an exhaustive paper on the subject before the Philosophical Society of Glasgow on March 3, 1886.

In considering the prevention, he stated that a well-fitting rubber plug rendered it possible for him to remain inside a fine, while the hammering was going on, with impunity; and he observed that while the plugs were in his ears he was able to hear the voice of a speaker better than when the ears were open. It is clear, then, that proper plugging of the ear would act as a preventive without accompanying prevention of cranial conduction.

The affections due to exposure to explosives occur chiefly in sportsmen, soldiers, and especially in naval men. Sportsmen get nerve-deafness, after continual firing, in the left ear owing to the way in which the head is held. Artillerymen and naval men are both exposed to the same varieties of ear affections, but the latter more so on account of the proximity of the explosions. The ear affections produced by gun-fire in the navy are, in my opinion, worthy of the serious attention of the authorities. It has been noticed that a great number of the naval officers passing through King Edward VII Hospital are more or less deaf, and we must all see them in practice. The officers are more affected than the men, as they are necessarily more exposed during gun practice.

The affections are of several varieties. Occasionally the membrane is ruptured by exposure to the concussion of a large gun, the accident being more likely to occur if the concussion is un-

expected. As a rule only one ear is affected, and recovery is usual, but some nerve deafness may be also produced. If infection takes place, an acute inflammation of the middle ear occurs, leading, in some cases, to a chronic suppuration or to acute mastoid trouble with all its attending dangers.

I have lately had under my care an officer who had his left membrane ruptured in a submarine explosion, with subsequent mastoid infection.

Again, the single concussion from a large gun may cause more or less lasting nerve-deafness with hissing tinnitus, usually only on the side exposed, without rupture of the membrane.

The most common cases, however, are those of gradual nerve-deafness, without tinnitus, coming on after repeated exposure to gun-fire. As a rule both ears are affected, but one more so than the other. Deafness is often marked after gun-practice, but recovery occurs after a time; repeated exposure is necessary to procure this lasting deafness.

All the sufferers are unanimous in stating that the smaller guns, with a high-pitched, sharp, penetrating report are the greatest offenders. They usually seek advice as they find that although individual conversation may be easy, yet they are unable to hear at the theatre or in general conversation, especially at the dinner-table, and are thus handicapped socially and domestically. In some the deafness is more serious and interferes with their work.

If these troubles may occur during gun practice in peace time, what would be the aural condition of a crew during and after an engagement, when, besides their own fire, they are also exposed to shell from the enemy constantly bursting on board?

The Japanese are quite alive to the trouble, for Surgeon-General Suzuki, of their navy, lately described how cotton plugs for the ears were served out to every man in the fleet before action. He stated, however, that cotton plugs did not give sufficient protection and that the subject required further investigation (*British Medical Journal*, October 28, 1905).

Prevention in all these cases may be, and in my opinion should be, prevented by efficient plugging of the ears, although it is important that those exposed should be free from any cause which is likely to produce Eustachian obstruction.

With regard to the means for efficiently plugging the ears I should like to ask the opinion of members, and wish to draw attention to a material called "clay fibre" invented by Sir William

Dalby. It can be readily moulded to fit any ear, it gives perfect protection, and is easily removed in one piece.

Dr. HERBERT TILLEY asked what were the results of the treatment by the method recommended by Mr. Cheatle. Only a few hours ago he (Dr. Tilley) saw a case absolutely similar to that which Mr. Cheatle had described, in which the nerve-deafness was extreme. The patient was a lieutenant on H.M.S. *Excellent*, and he was unable to hear the Galton whistle two inches from the ear. Still, his power of hearing conversation was surprisingly good compared with the degree of nerve-deafness. He would like to hear whether remaining away from gun-firing for any time did any good, also whether the constant current, the administration of strychnia, or counter-irritation were of any use. The prognosis was very important in these cases, because patients often required to know whether it would be necessary to leave the service and seek some other occupation. Had Mr. Cheatle seen a sufficient number of cases in which any kind of treatment had been of benefit so that one might be guided in giving a prognosis?

Mr. CRESSWELL BABER said the question of protecting the ear from loud noises often came under his notice. Some time ago he had rubber plugs made filled with sawdust for the use of a revolver shot, and they were described as a great convenience. He had tried them on himself and found them satisfactory for travelling when noise interfered with sleeping. The sound could not be entirely shut out by that means, because sound travelled through the bones of the head. The efficacy of the plug was increased by putting a pad of cotton-wool over the ear. In his experience no treatment did any good in such cases, except that keeping patients away from the noise prevented the condition becoming worse.

Dr. W. MILLIGAN said he had seen many instances of the condition in boiler-makers, but had been very disappointed with every form of treatment which he had tried. Not only was a certain amount of good obtained by plugging the ear by means of such a device as Mr. Cheatle recommended, but also by instructing the patient to keep the mouth a little open by a piece of rubber between the teeth. That seemed to allow of equalisation of atmospheric pressure on both sides of the tympanum. Drugs and other forms of treatment seemed to him to be absolutely useless.

Mr. HAROLD MOLE asked whether there was any chance of boiler-makers and others getting worse after leaving off their occupation.

Dr. EDWARD LAW supported the remark of Dr. Milligan in

reference to the patient holding a piece of rubber in his mouth. Last week he saw a naval man, and learnt from him that many officers chewed a tooth-pick when big guns were fired, for they had discovered that in such circumstances the concussion on their ears was much less. He asked whether Mr. Cheatele was not of the opinion that the membrane rarely ruptured unless it was previously affected by pathological changes.

Mr. MACLEOD YEARSLEY remarked on the statement in the paper that when Dr. Barr, the President, experimented with plugs he was the subject of paracusis. That was a very interesting point, because so little was known about paracusis, and it was a question which some of the members might do well to think about and express their opinions upon. Many theories had been offered about it, and there seemed to be a reversion now to one of the older of those views.

Dr. URBAN PRITCHARD said that many years ago he went to Leeds to examine some cases of boiler-makers' deafness at the invitation of Sir James Kitson. He (Dr. Pritchard) published his results, which confirmed the President's remark. In the boiler-makers' shop he could distinctly hear better when he pressed his fingers into his ears. Again, he had observed that when in a rattling cab he could hear conversation quite as well and far more pleasantly by putting the fingers into his ears. Referring to the practice by the Japanese of putting cotton-wool into the ears, it was not very efficacious if put in lightly; but if it were twisted up hard it was much more effective. Seeing the communication in the *British Medical Journal* referring to the Japanese, he (Dr. Pritchard) asked a young naval captain why the same course was not adopted in the English navy, and he replied that it was. Formerly the officers and men would not use it, but now they were doing so. He believed that unless there was a very severe explosion near at hand, rupture of the membrane did not occur without previous Eustachian obstruction. With regard to the deafness itself, formerly he had been occasionally deceived, and therefore ventured to mention that such a case when examined in the quiet of one's consulting room by conversation might seem to hear normally. Then one might say to the patient, "You can hear well enough," and he would reply, "I am deaf." The point was to test him with the high notes of the tuning-fork, which would, of course, reveal the deafness.

Dr. DUNDAS GRANT corroborated the somewhat unfavourable prognosis which had been arrived at by other speakers; but he remembered the case of a locomotive-driver who was improved to

some extent by the use of the continuous current, but it was such an isolated case of that kind that there was probably some coincidence. He had only recently heard of the plan of having india-rubber between the teeth during the firing of the guns; it was from a man who did much shooting, who said the india-rubber prevented him from getting the headache which he had previously had while shooting. In one of Dr. Grant's cases the deafness was in the right ear, and it transpired that the man shot from the left shoulder.

Mr. C. H. FAGGE said he supposed all otologists had seen cases of naval officers with deafness due to concussion from gun-fire, and he would be glad to hear from Mr. Cheatle whether such patients should be told they were to give up their profession. As regarded treatment, one patient told him that it was a common custom for naval officers to carry about and wear indiarubber shields, very much like the teat of a baby's bottle. He asked whether Mr. Cheatle included in his remarks other explosives than gun-fire. To him it was curious that people who became deaf from shooting almost invariably suffered on the left side. The fact that the left ear was nearer to the gun-nuzzle did not appear to be a sufficient explanation, as the difference in the distance of the two ears from the explosion was not great.

Mr. A. E. CUMBERBATCH thought he recognised in the plugs handed round by Mr. Cheatle an old friend—jeweller's wax, which when placed in the meatus would fit it exactly, and could be withdrawn safely without leaving any behind.

The PRESIDENT asked whether the material recommended by Mr. Cheatle would irritate the meatus. In his own investigations, twenty years ago, into the hearing of the boiler-makers on the Clyde, he found that, when starting work as boys, they put cotton-wool or waste into their ears on account of the *painfulness* of the sound, which concerned them much more than the likelihood of deafness ensuing. In his own case, when inside a boiler with the riveting going on, the sensation in the ear was intolerable and comparable to innumerable needles penetrating the ears. When the youths become accustomed to the sound, which gradually becomes less painful, they no longer use the cotton-wool. If the material brought forward by Mr. Cheatle could be worn without irritation it would be a great boon, not only to those exposed to loud sound at their work, but to persons travelling at night by train or steamer and unable to sleep because of the noise. An objection in regard to ordinary ear-plugs is that purchasers going

into a chemist's shop are allowed to try a number to find which may fit the ear. When we consider that such persons may be suffering from purulent ear disease, which may thus infect the discarded plug, one feels that the risks involved of infecting the healthy ear of a subsequent customer are considerable, risks which would be avoided by the use of such material as Mr. Cheatle had shown to them.

Mr. G. JACKSON said he had tried small wooden plugs and had not known them to produce any irritation.

Mr. CHEATLE, in reply, said the only treatment which produced real benefit was rest from exposure. The amount of improvement which would ensue depended upon the period during which the patient had been exposed to the noises. If for a long time the condition was not improved, but if only for a short time the condition improved to some extent. Treatment of any sort apart from rest was useless. With regard to prognosis, the deafness did not increase if the patient ceased to be exposed to gun fire. Dr. Law's contention that a drum did not rupture unless it was unsound was probably true, but he (Mr. Cheatle) had seen instances of ruptured drums which had been previously perfectly healthy. He had heard captains and admirals say that if they saw their men with plugs in their ears they would soon have them out. The men often used cotton-waste as a plug if they could obtain it. He interviewed the Director-General of the Navy on the matter many months ago, and he said he had never heard much of it, but he reminded that gentleman that he was the last person to hear of it, because a man who was dependent upon his report for promotion would not state such a defect to him. With regard to the question whether they should give up their profession, some of them were compelled to, and to save the hearing it would be better if they did so. The material used for the plug was not merely jeweller's wax, there was some fibre in it also, to insure none being left behind when it was withdrawn. He had never known it worn for many hours every day but only during gun-fire, and in those cases it produced no irritation. The Director-General asked whether it would enlarge the meatus, but of course he assured him that that would not happen.

(To be continued.)

THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.—At the Annual Meeting, held on December 4, the following Members were elected as Officers and Members of Council for the ensuing Session

1905-1906.—President: Mr. A. E. Cumberbatch; Vice-Presidents: Mr. C. A. Ballance, Dr. Adolph Bronner, Dr. R. H. Woods; Honorary Treasurer: Dr. Edward Law; Honorary Librarian: Mr. Richard Lake; Honorary Editor of *Transactions*: Dr. Jobson Horne; Council: Dr. Thomas Barr, Dr. Logan Turner, Dr. F. W. Bennett, Dr. William Permewan, Mr. L. A. Lawrence, Mr. C. H. Fagge; Honorary Secretaries: Mr. Macleod Yearsley, Mr. Secker Walker.

At the annual dinner, held the same evening, the retiring President—Dr. Thomas Barr—presided over a company of eighty members and their guests. Amongst the latter were Mr. John Tweedy (President of the Royal College of Surgeons of England), Sir Lander Brunton (President of the Medical Society of London), Professor Lermoyez (Paris), Professor Thorburn (Manchester), and Sir Felix Semon.

Abstracts.

FAUCES.

Armstrong, G. E. (Montreal).—*Carcinoma of the Tongue*. "Montreal Medical Journal," June, 1905.

After a somewhat exhaustive article upon the subject, the writer closes with the record of a case in which he removed the whole tongue, the floor of the mouth, and the glands on both sides, with thorough dissection down below the bifurcation of the carotid. Seven years later, at the time of writing, the man still enjoyed perfect health, and was able to transact his regular business. The floor of his mouth had filled up, and he could articulate with some clearness. *Price Brown.*

Wishart, Gibb (Toronto).—*The Lymphoid Tonsillar Circle*. "Canada Lancet," September, 1905.

This is a record of cases treated at the Toronto Sick Children's Hospital from June, 1899, to June, 1905. As the lingual tonsil is practically non-existent in children it is not dealt with in this report.

The total number of in- and out-patient cases was 725. Of these about one fifth had enlargement of the pharyngeal tonsil alone, another fifth of faucial tonsils alone, and exactly three fifths suffered from enlargement of the two combined.

The female patients in the latter were considerably in excess of the male patients, less so in those confined to faucial hypertrophies, and in slight minority in cases in which the pharyngeal or third tonsil was the only one affected. *Price Brown.*

NOSE.

Goldsmith, Perry E. (Belleville).—*Inflammation of the Nasal Mucous Membrane.* "Canada Lancet," June, 1905.

A short article upon acute, chronic, and atrophic rhinitis, in which the causes and treatment are especially dwelt upon, the symptoms, seemingly, being too obvious to require elaboration. *Price Brown.*

Birkett, H. S. (Montreal).—*Two Cases of Bony Occlusion of the Right Posterior Naris.* "Montreal Medical Journal," June, 1905.

These were both congenital cases, one occurring in a little girl aged nine, the other in a young woman aged twenty-three. In each the right nasal passage was wide and spacious, and filled with thick, tenacious mucus. After this was removed the bony wall was discovered by both anterior and posterior rhinoscopy. On the occluded side in each case both olfaction and audition were affected.

The treatment in each case was alike. The bony partition was perforated by an electric drill passed through the nostril, its action being guided by the finger introduced into the naso-pharynx. After the operation a strip of iodoform gauze, inserted into the opening and retained there for a time, prevented closure. The result in each case was satisfactory. *Price Brown.*

THYROID.

Rudolf, R. D. (Toronto).—*The Medical Treatment of Exophthalmic Goitre.* "Dominion Medical Journal," August, 1905.

In summarising, the writer lays down several rules:

(1) The patient should be kept mentally, physically, and emotionally quiet.

(2) The state of the general health should be raised as high as possible. Anæmia, constipation, and any other abnormal condition should be carefully attended to.

(3) The diet should be plain and good, all stimulants being avoided.

(4) An attempt should be made to prevent excessive production of thyroid secretion, and to neutralise the poison from it as it circulates in the blood.

(5) The different symptoms should be treated as they arise.

In order to accomplish these requirements medically, the application of cold is advised, also the use of gentle pressure over the thyroid gland. The electric or faradic current may also be of service. Of medicines, belladonna and bromide of strontium are recommended, together with supporting measures. *Price Brown.*

ŒSOPHAGUS.

Coolidge, A., Jun. (Boston).—*A Foreign Body in the Œsophagus.* "Boston Med. and Surg. Journ.," May 25, 1905.

Patient a woman, aged twenty, who swallowed a large safety-pin. The pin was shown by the X rays to be open, point up, and about 4 cm. above the transmammary line, and to the left of the median line. It was removed by means of a Killian's tube under ether.

Macleod Yearsley.

E.A.R.

Gray, Albert A.—*The Pathological Conditions found in the Case of an Individual who had suffered from Deafness during Life.* "Brit. Med. Journ.," November 4, 1905.

The individual from whom the temporal bones were removed *post mortem* had suffered from almost absolute deafness and very severe tinnitus for a period of seventeen years before her death, at the age of seventy-one.

The patient died from malignant disease of the uterus, and in addition to the conditions relative to the cancerous affection the following were noted in regard to the anatomical changes found in the temporal bone and the adjacent structures :

The bones of the skull were remarkably soft, and the saw went through the calvarium almost as if the bones were of the consistency of hard cheese. The greater part of the temporal bone was almost soft in character, and the dense, ivory-like capsule of labyrinth was much reduced in thickness. The mucous membrane of the tympanum and Eustachian tube was normal throughout. The malleo-incudal joint was ankylosed on the right side but not on the left. On both sides the stapes was completely ankylosed in the oval window, the ankylosis being bony throughout.

In the left membranous labyrinth the changes in the bony capsule were found to have produced distortions in the two limbs of the posterior canal by encroaching on its lumen. The cochlear branch of the auditory nerve was atrophied at least in the two upper turns of the cochlea. The ligamentum spirale appeared to be of a less dense nature than normal, though this may have been due to old age and not to the disease.

In the right membranous labyrinth there was found to be no actual distortion. The ligamentum spirale was atrophied, as was also the cochlear branch of the nerve. There were two masses of calcareous deposits, one in the common limb of the posterior and superior canals and the other in the posterior limb of the horizontal canal.

THERAPEUTIC PREPARATION.

FORMAWN (The Chemical Works, 26, Southwark Bridge Road, London, S.E.).

"FORMAWN," an abbreviated term for chlormethylmenthylether ($C_{10}H_{19}OCH_2Cl$), has been found to have a remarkably favourable action in catarrhal affections of the naso-pharyngeal cavity. It is administered by means of a specially constructed inhaler, consisting of a glass generator or warming vessel, fitted with a glass stopper having two olive-shaped extremities to be inserted in the nostrils in such a way that the nasal septum may be conveniently situated between the two extremities. The inhaler should be half filled with hot water and one tablet of Formawn added. The gas thus generated should be inhaled through the nostrils. The therapeutic efficacy rests upon the easy decomposition which ensues the more rapidly in proportion to the heat of the water, Formawn splitting up into its components—menthol, formaldehyde, and hydrochloric acid—the two former of which disperse *in statu nascendi*, leaving the latter dissolved in the water.

THE
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**THE DANGEROUS SEQUELÆ OF MIDDLE-EAR
SUPPURATION.**

BEING A RETROSPECT OF 1905.

BY DUNDAS GRANT, M.D., F.R.C.S.

THE dangerous sequelæ of suppurative inflammation of the middle ear, formerly one of the most depressing chapters in otology, has now become one of the most encouraging, as it is undoubtedly one of the most interesting and important. The American Laryngological, Rhinological and Otological Society devoted a meeting to a symposium¹ on the "Intra-Cranial Complications of Middle-Ear Suppuration," which Dr. E. B. Dench opened with his characteristic thoroughness. He gave statistics which may be taken as thoroughly illustrative, and, as he states, fairly accurate, with the reservation of certain doubts with regard to meningitis, many cases of which he considers must have escaped observation.

Meningitis.—Dr. MacCuen Smith stated that although the symptoms in many cases of meningitis were perfectly clear and unmistakable, in others they were often latent; how latent they may be is shown by the valuable case narrated by Mr. Cumberbatch before the Otological Society of the United Kingdom.² In

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 479.

² *Ibid.*, p. 70.

this instance a fatal lepto-meningitis followed upon acute suppurative otitis media of influenzal origin, with a remarkable absence of pathognomonic symptoms, there being persistent high temperature but very little headache, and no vomiting. Exploration of the lateral sinus gave a negative result; the patient became drowsy, ultimately unconscious, and on *post-mortem* examination there was found lepto-meningitis of the entire left side of the brain, while the venous sinuses and jugular vein were free from any clot, and all the organs were found to be healthy. Dr. MacCuen Smith included lumbar puncture among our therapeutic resources in meningitis, and in the discussion on Mr. Cumberbatch's case a member reminded the Society of Lermoyez's favourable report with regard to treatment by means of repeated copious lumbar punctures combined with a very large trephine opening in the skull to diminish pressure and relieve tension. Grossmann,¹ on the other hand, questions whether lumbar puncture is of any value as a therapeutical measure in cases of otitic meningitis. Allowing for its limitations and the uncertainties at present of the indications for its employment, there can be no doubt that most of us will agree with Dr. Wendell Phillips² that it should be used in practically all cases of meningitis, a careful examination of the cerebro-spinal fluid often determining the exact character of the intra-cranial condition. Remarkable recoveries observed in many cases presenting in a marked degree the symptoms of meningitis have been shown to be due to the inflammation being of a serous rather than a purulent nature. This has been demonstrated by lumbar puncture, which enables us to give a more favourable prognosis, and to recommend the more confident adoption of life-saving methods of operation. Dr. Phillips³ reminded his hearers that "statistics showed that injuries to the head were quite frequently associated with attacks of meningitis from middle-ear suppuration." From this we may deduce the prophylactic caution that the subjects of chronic suppuration of the middle ear should be particularly careful to avoid the risk of injuries to the head.

Cerebral and cerebellar abscess.—Several cases have been published in which some of the most distinguishing symptoms have been absent. In one of Whitehead's cases⁴ there was a high temperature and symptoms suggesting meningitis, with very rapidly increasing drowsiness. Exploration revealed no pus. Next day the temperature went down, but the drowsiness increased. Lumbar puncture withdrew clear fluid, and on a subsequent exploration of

¹ *Ibid.*, p. 505.² *Ibid.*, p. 484.³ *Ibid.*, p. 483.⁴ *Ibid.*, p. 84.

the cerebrum on the fifth day semi-purulent blood-stained fluid was evacuated. Halsted¹ describes a cerebral abscess following acute suppuration of the middle ear at an interval of ten days.

An instructive case of cerebellar abscess following acute middle-ear suppuration is narrated by Bull,² apparently developing in three weeks, but with a high temperature. Pus was found in the sigmoid sulcus, but the sinus appeared normal. Temperature descended, but rose next evening with a rigor. The jugular vein was tied and the sinus incised with negative result. The dura behind was incised, and softened, broken-down brain-matter escaped. A hernia cerebelli formed and was incised, two drachms of pus escaping. Drainage was ultimately followed by perfect recovery. Pinder,³ in a fairly typical case, explored the cerebellum behind the sinus with negative result, but evacuated pus when the cerebellum was further explored on the central side of the sinus, recovery ensuing. Okada, in his classical work on cerebellar abscess, strongly advocates this route as being the most nearly in the line of infection. In fifty per cent. of cases the abscess is due to infection from the labyrinth or the bone in its neighbourhood (around the aqueductus vestibuli), and the point mentioned is, of course, indicated. In the remaining fifty per cent. the abscess arises from phlebitis of the sinus, and then perhaps the opening behind the sinus, or through it, is to be preferred. In any case, if the suppuration persists after evacuation by one of these routes, a counter-opening may be made through the other.

Hernia cerebri et cerebelli.—Hunter Tod⁴ relates an exceptional experience—namely, the occurrence of a hernia of the size of a boy's fist at the site of exploration in a case of encephalitis following acute middle-ear suppuration. Pus was found in the groove for the lateral sinus, and the internal jugular vein was ligatured, the sinus on incision being then found free from thrombus. Drowsiness and shivering followed, and exploration of the cerebrum and cerebellum was carried out, serous blood-stained fluid without pus escaping. A huge hernia formed, and the boy appeared about to die from meningitis, but he gradually recovered, although the hernia still persisted.

Sinus phlebitis.—McKernon,⁵ in reviewing the symptoms, considers temperature the most important, rigors not being constant. The pain is usually greater than that of an ordinary mastoiditis. Such local signs as œdema in the mastoid region and in the neighbourhood of the mastoid and occipital emissaries are

Ibid., p. 611. ² *Ibid.*, p. 250. ³ *Ibid.*, p. 500. ⁴ *Ibid.*, p. 154. ⁵ *Ibid.*, p. 481.

only occasionally met with, and the "cord-like" hardness in the line of the internal jugular vein is very infrequent. The author attaches considerable importance to the presence of a high percentage of polynuclear leucocytes in the blood.

Some questions relating to ligature of the internal jugular vein are raised by Dundas Grant.¹ He points out that in many cases, as shown by Macewen, Cheatle, and himself, recovery can be brought about without ligature, and that, although in many cases it is necessary for the saving of life, and in most cases is quite harmless, there is a residuum of cases in which, as, for instance, from abnormal narrowness of the opposite jugular, serious cerebral disturbance may be produced. He holds that the operator's attention should be centred more on the sigmoid sinus than on the jugular vein. The members of the Otological Society were in general strenuous advocates for the ligature of the vein as a matter of routine. In view of the divergence of opinions Dr. Grant suggested that the subject might be made the subject of a set discussion.

A case of infective thrombosis of the sigmoid and lateral sinuses after acute mastoiditis ending fatally from meningitis is reported by Arnold Knapp,² who draws from it arguments in favour of opening the sinus earlier than is usually done, and of distrusting the appearance of a clot however harmless it may look. He is in favour of exposing the lateral sinus as far back as the torcular, shutting off the circulation at that point by firm pressure and excising the entire external wall of the sinus. This, like other principles, has to be applied to different cases according to the special circumstances, which the operator must learn to appreciate, as a player has to appreciate the "fall of the cards" if he is to apply the rules of the game with the best results.

¹ *Ibid.*, p. 453.

² *Ibid.*, p. 478.

THE Extra-Metropolitan Meeting of the Otological Society of the United Kingdom will be held at Leeds this year on the second or third Saturday in June.

ON THE DENTAL SALIVA EJECTOR AS A SURGICAL INSTRUMENT.¹

BY ROBERT H. WOODS, M.B.DUB., F.R.C.S.I.,

Surgeon to the Throat, Nose, and Ear Department, Richmond Hospital, Dublin.

SOME years ago, when opening a discussion at the British Laryngological Association on "Tumours of the Pharynx," I drew attention to the great advantage I had derived from using the ejector as a means of removing blood and mucus during operation. Though the account was published in some of the journals at the time, the device has not had the attention it deserves, being still practically unknown in surgery. I have now had experience of the instrument for seven years in my private work and in the New Richmond Hospital since its completion, five years ago.

For surgical purposes the largest instrument is best. That sold by Claudius Ash & Sons, of London, under the name of the "Wall saliva ejector," is the kind I have always used and I find it very efficient. It is attached to the town water supply by a tube taken either directly from the main or close to it, so that the opening of the taps for other purposes will affect the pressure as little as possible. The waste pipe from the ejector discharges into a trap. A good water pressure is necessary if a good negative pressure is to be obtained. In Dublin, where we have in the daytime about 50 to 60 lb. per square inch, a negative pressure of 27 in. of mercury is obtainable, but this is more than enough.

A sufficiently long piece of aspirating tubing (three or four yards is a workable length) connects the ejector with a nozzle, the point of which is dipped into the fluid intended to be removed. The nozzles I use are of two kinds, one a brass tube of about 2 mm. bore, over the proximal four inches of which is a thicker handle for convenience of manipulation. The tube after it leaves the handle is bent slightly, for use in the nose. Instead of getting the patient to blow the nose and then wiping away what remains with pledgets of cotton-wool, it is simply necessary to touch the blood, mucus, or pus with the point of the instrument, and everything is spirited away more elegantly, more thoroughly, more quickly, and with infinitely less trouble and discomfort both to the operator and the patient. Patients, in fact, do not know that anything is being done.

These advantages were even greater before adrenalin was

¹ Communicated to the British Laryngological, Rhinological, and Otological Association, January 5, 1906.

known than to-day, but they are still sufficiently great. Even with a tube of such a small bore as 2 mm. I have never seen a blood-clot, old or new, that could not be broken up in this way.

It might be thought that a 2 mm. tube is unnecessarily small, but there is a reason for it. First, by having the tube of soft brass it is easily bent so as to get to every desirable corner. Second, in nasal operations, where small bits of tissue may be mixed up with the blood, etc., anything small enough to pass the nozzle will not stick in the apparatus. If the nozzle gets choked with a piece of tissue the water makes a different sound and the operator removes the tissue from the point, or if it sticks half way down the nozzle he substitutes another and clears the obstructed one at his leisure.

The instrument is of great value for removing blood during extensive operations about the mouth and throat. Bleeding in such cases is invariably free, and it not only hampers the operator by obscuring his field, but may seriously interfere with the patient's respiration. These annoyances may be largely reduced by an assistant who uses the ejector tube intelligently.

But the instrument is perhaps at its best in cleft-palate operations. In these cases I seat myself at the head of the table while the patient is in the "head down" position, the head being supported by a small sandbag on a head-rest. My nozzle is a short leaden tube of the kind that used to be employed in the old-fashioned pneumatic bell. This has the following advantages: It is sufficiently heavy not to be pulled on to the floor by the weight of the rubber tubing, so that it may be laid in the operator's lap when not in use, or it may be bent in the middle end inserted into the nose, taking care that the opening is not pressing against the mucous membrane. The blood as it gravitates to the nose and naso-pharynx is taken up by the ejector, and sponging is all but unnecessary. This is a point of some importance, as even with skilled anæsthetists sponging may excite vomiting.

As an alternative plan to having the ejector permanently connected, it may be coupled to an ordinary cold tap over a sink by means of the ingenious "adapter" used for adapting the common garden hose.

It will be seen that since the current is always along the tube towards the ejector there is no possibility of infection from it. Several nozzles are necessary, so as to have a sterile one for each case, and the rubber tube should be boiled whenever the outside is exposed to infection.

The ejector will sometimes be found of great value in the treatment of wounds after operation, especially in bladder cases. Mr. H. Herring informs me that he has derived the greatest assistance and his patients the greatest comfort from it after suprapubic cystotomy. His method of using it is to wrap the end of the ejector tube with gauze and put it into the bladder. The gauze has the double function of collecting the fluid for removal through the tube, and of providing an inlet for air, so that the inside of the bladder is never subjected to negative pressure. The patient is entirely unconstrained as to posture, and his dressings remain perfectly dry.

I have myself used the instrument in precisely the same way to remove saliva after a plastic and grafting operation on the mouth, and with the best results.

I think every operating theatre and hospital ward should be supplied with this instrument as part of its equipment. No one who has once had experience of its advantages would willingly do without it either during operation on, or the subsequent treatment of, those cases for which it is suitable.

THREE CASES OF CEREBELLAR ABSCESS.¹

BY A. L. WHITEHEAD, M.B., B.S.LOND.,

Aural Surgeon, General Infirmary, Leeds.

SUPPURATION in the temporal bone may extend backwards into the posterior cranial fossa along three paths—through the lateral sinus, through the labyrinth, or through the triangular area of bone bounded above by the superior petrosal sinus, in front by the posterior semicircular canal, and behind by the lateral sinus.

The relative frequency with which the infection spreads through the last-named area is of considerable clinical importance, and an investigation of twenty-three cases of cerebellar abscess which have occurred in the Aural Department of the General Infirmary at Leeds during the last few years shows that in nine cases the path of infection lay through the area above mentioned, the lateral sinus and internal ear being unaffected.

Three cases of cerebellar abscess have come under my care during the last few months, and two of these show the importance

¹ Communicated to the Otological Society of the United Kingdom, February 5, 1906.

of a careful investigation of the condition of the bone in this locality.

The first case was that of a child aged five years. For two years there had been continuous otorrhœa on the right side, for fourteen days there had been headache, pain in and about the ear, and for two or three days drowsiness, with some tenderness over the mastoid process, but no vomiting, convulsions, or any affection of the eye, trunk, or limb-muscles.

When first seen the temperature was 99° F., pulse 96, and respirations 27. The auditory canal contained foul pus, and the middle ear could not be seen owing to the depression of the superior meatal wall.

The radical operation was performed and extensive bone-disease found. The disease extended backwards through the triangular area above mentioned, and a small extra-dural abscess was discovered. Further search revealed a small, ragged perforation in the dura mater communicating with an abscess in the cerebellum containing about 2½ drachms of pus. The dura was more freely opened and the abscess cavity drained. The drowsiness and headache passed off in two days, and the further progress of the case was uneventful and completely satisfactory.

The second case was that of a girl aged sixteen. When five years old she had measles associated with corneal ulceration and otorrhœa. Both eyes were quite destroyed by the corneal suppuration, and although the left ear ceased to discharge otorrhœa persisted from the right.

Four days before her admission into hospital she had a convulsion, with loss of consciousness, lasting two or three minutes, and during the following days she remained heavy and drowsy, with occasional attacks of vomiting. During the six hours preceding her admission she became rapidly worse, and when admitted was almost moribund and quite comatose.

There was an offensive right otorrhœa, but no external mastoid signs, no nystagmus, no paralysis or rigidity of the limbs, and the knee-jerks could not be obtained.

The radical operation was performed, and on removing the cortex extensive disease was found. The bone was almost black and the pus very offensive. The disease extended back through the triangular area, and a small extra-dural abscess was found. The cerebellum was explored and an abscess, containing about a drachm and a half of pus, opened and drained. Consciousness was never regained, and death occurred ten hours later.

Both these cases clearly demonstrate the importance of a careful search, in all cases of temporal bone disease, of the triangular area above indicated, and the frequency with which infective processes will select this track.

The third case is of considerable interest since both the temporo-sphenoidal region and the cerebellum were affected. A double lesion of this kind is rare. In fact, amongst our records of twenty cases of temporo-sphenoidal abscess and twenty-five cases of cerebellar abscess suppuration in both regions has only been recorded in one other case.

The patient was a boy aged eight. Otorrhœa had been present on the right side for three weeks. For seven days there had been headache, drowsiness and frequent vomiting. No vertigo, nystagmus, or rigors had been observed.

When first seen he was very drowsy, but could easily be roused and answered questions intelligently. The pupils were equal and reacted readily, and no optic neuritis was present. No paralysis of the trunk, limb, or face muscles was present, and the knee-jerks were absent. The temperature was 98.4° F., pulse 90, respirations 16. The right auditory canal was filled with pus, and a perforation could be seen in the lower portion of the drum; no mastoid signs were present.

The radical mastoid operation was performed and extensive bone-disease discovered. The tegmen antri was diseased and the exposed dura mater inflamed. The temporo-sphenoidal lobe was explored and a small abscess opened and drained. There was gradual improvement for about a fortnight, the boy's mental condition being considerably better, and vomiting ceased. A large amount of pus was discharged from the cerebral abscess. The improvement was not maintained, and twelve days after the operation double optic neuritis was observed for the first time, although the eyes had been examined every other day. Large quantities of pus continued to come away from the abscess, together with fragments of breaking-down brain substance. Three weeks after the operation vomiting returned, and further exploration of the temporo-sphenoidal lobe opened up another abscess. The patient however, gradually got worse, and died five weeks after the first operation, no further localising signs or symptoms having developed.

At the *post-mortem* examination a large abscess cavity in the temporo-sphenoidal lobe and an unopened, and unsuspected abscess in the right lobe of the cerebellum were found. The lateral sinus

was healthy and the triangular area of bone showed no disease. There was opacity of the pia mater in the neighbourhood of the internal auditory meatus, and a further examination of the temporal bone showed that the path of the infection lay through the internal ear and internal auditory meatus.

The rate of mortality in cases of cerebral abscess is, I believe, considerably higher than a study of the text-books would indicate. The only reliable statistics are those to be obtained from the various hospital Reports.

I have not been able to make an exhaustive search, but during the five years up to 1904 in the "St. Thomas's Hospital Reports" there are recorded 19 cases of temporo-sphenoidal abscess, of which 12 died, and 7 cases of cerebellar abscess, of which 6 died, and 2 cases of combined temporo-sphenoidal and cerebellar abscess, both of which were fatal.

In the "St. Bartholomew's Hospital Reports" for the same period 17 cases are recorded, the proportion of cerebral and cerebellar abscess not being stated. Of these 15 were fatal.

Our own statistics at Leeds for the last six years record 10 cases of temporo-sphenoidal abscess, of which 5 died, 9 cases of cerebellar abscess, of which 6 died, and 2 cases of combined temporo-sphenoidal and cerebellar abscess, both of which were fatal.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

Meeting held January 12, 1906.

DR. G. GELLE *in the Chair.*

LARYNGOTOMY WITHOUT CANNULA.

BY DR. A. CASTEX.

The author narrated two recent cases of laryngotomy performed on account of epithelioma and syphilitic condylomata, which he had been able to carry out successfully without employing the tracheal cannula, either during or after the operation. He considers, in fact,

that the employment of the cannula complicates the technique, irritates the trachea, and provokes a cough which is particularly injurious; it interferes with the expulsion of blood and of the secretions which block the trachea, and it affords an inlet for infection and leaves a more conspicuous cicatrix. Nevertheless he does not proscribe it absolutely, but keeps it as a resource when it cannot be avoided.

He further insists upon the usefulness of a drainage-tube inserted under the cutaneous sutures, in order to make sure of the exit of air and saliva, which sometimes find their way into the pre-laryngeal region.

Dr. GEORGES LAURENS agreed with Dr. Castex that it was preferable to do without tracheotomy as a preliminary to laryngotomy. The disadvantages were numerous—pulmonary infection, infection of the wound, etc. It was often necessary to have recourse to it as an operation of necessity during a thyrotomy, if the endo-laryngeal intervention was of long duration (section of a stricture, auto-plasty, etc.), or hæmorrhagic (epithelioma, etc.). But, then, one could and ought to remove the cannula as soon as the operation was finished, taking care to drain the teguments by means of an indiarubber tube in order to avoid emphysema. If the operation was performed with the patient on an inclined plane (head downwards) one might do without tracheotomy, being thus able to avoid the entrance of blood into the air-passages.

Dr. BOURGEOIS confirmed what had been said by Dr. Laurens with regard to the inclined position. He had seen in an operation (rapid tracheotomy) the trachea filled with venous blood; the patient would have died of asphyxia, as if drowned, if it had not occurred to him to turn him with his head downwards.

Dr. CAUZARD was also of the opinion that the inclined plane was by far preferable to any form of tampon-cannula. He asked Dr. Castex the length of his incision over the tracheal rings, on the one hand, and on the anterior wall of the vestibule of the larynx on the other hand. Did this incision involve the epiglottis? He asked the question in order to know the route followed by food in the second case, and if it were the glosso-epiglottic route.

Dr. CASTEX said he confined his incision to the thyroid cartilage and the thyro-hyoid and crico-thyroid membranes. He then obtained an opening sufficient to enable him to see into the larynx.

NASAL SYPHILIS WITH A PROGRESSIVE DESTRUCTIVE COURSE; DEATH OF THE PATIENT.

BY DR. MOUNIER.

This was a case of tertiary syphilis of the nose in the case of a man, aged thirty-six, who was not alcoholic, which, in spite of the treatment employed, ran a fatal course by destruction of the osseous framework of the nose and of the vault of the palate. The only explanation admitted by all those who were consulted in this case, in order to account for its unusual gravity, was the absence of all treatment during the first three months of the disease.

Mercurial inunctions, iodide of potassium, injections of calomel, of grey oil, of soluble salts, produced no effect; iodipine seemed to bring about considerable improvement, but it was only transitory. The patient died in a state of cachexia, suffering from unbearable pains, which were only relieved by the subcutaneous injections of morphia and heroin. The author had removed at one time or another a considerable part of the nasal bones and of the necrosed palatine vault.

Dr. COURTADE said a factor of importance in the prognosis of syphilis was the previous residence of the patient in hot climates. It had long been remarked that syphilis contracted in hot climates only became serious if the patient left them, or if it had been contracted in cold climates after residence in torrid regions.

Dr. MAHU added the following reason: As long as only mercurial treatment was employed there had been no result because the part affected by the syphilis was the nose. One might say—and he had some very striking proofs in support of it—that the treatment of tertiary nasal syphilis *demandé* the use of the iodide.

Dr. GELLÉ said he had observed, in the case of a syphilitic undergoing an intensive specific treatment for gumma of the larynx a lingual gumma evolve during the treatment. The iodide was combined with mercury without effect. In support of Dr. Courtade's statement, he might say that the patient had inhabited hot climates (Hayti), and had almost continuously for twenty years secondary manifestations in the mouth and pharynx. He had been a smoker, but he had stopped smoking for several years.

Dr. BOURGEOIS said that the situation of tertiary lesions at a spot where the secondary manifestations had been numerous and severe was now very interesting, because it had been said that

tertiary lesions were due to colonies which had remained locally dormant during the secondary period.

EXHIBITION OF INSTRUMENTS.

Dr. COURTADE exhibited a new model in metal, originally made of glass, of his *pneumodograph*, an apparatus intended to receive and fix upon special paper an imprint of the forced expiration through the nasal fossæ. This model is less sensitive than the preceding one, but more portable and light.

Dr. CATZARD showed two syringes (one for the nasal fossæ, the other for the trachea) in which the principal advantage was the glass piston which had been found so practicable in syringes for hypodermic injections.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundred and Second Ordinary Meeting, January 12, 1906.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

The following communications were made :

A CASE OF SINUS OF THE CHIN.

Dr. W. H. KELSON showed a woman, aged twenty-five, with a sinus situated in the centre of the tip of the chin; the patient had noticed it about four years, and from time to time it discharged a honey-like fluid. A probe passed upwards and backwards about half an inch; no bare bone could be felt. The question was whether it was due to want of closure of the mandibular fissure or to some other cause, such as diseased bone.

Mr. BETHAM ROBINSON said that, considering the fact that the duration was not more than four years, and the local conditions, he regarded it as inflammatory, and that it was probably connected with a sinus which tracked up to the root of one of the incisor teeth.

The PRESIDENT said such cases were not uncommon in the general out-patient room, and he had seen a fair number of them. Scraping-out had been tried, but it had invariably been necessary to sacrifice the incisor tooth. It would be found that the fang was exposed at the bottom of the

sinus. The trouble was probably caused by the right central incisor. It did not give rise to any pain.

A CASE IN WHICH A TRACHEAL CANNULA HAD BEEN WORN FOR NEARLY TWENTY-SEVEN YEARS ON ACCOUNT OF INCOMPLETE BILATERAL PARALYSIS OF THE POSTERIOR CRICO-ARYTENOID MUSCLES, WHICH HAD REMAINED UNCHANGED ALL THAT TIME.

Shown by Sir FELIX SEMON. This patient, now aged seventy-four, was shown on April 25, 1879, to the Clinical Society, and his case is briefly referred to in the twelfth volume of its 'Transactions,' 1880, as well as in my paper "On Mechanical Impairments of the Functions of the Crico-Arytenoid Articulation," *Medical Times and Gazette*, 1880. It is the third case of my own referred to in the collection.

When I showed the case before the Clinical Society, the anterior two thirds of the vocal cords remained almost closed on inspiration. The posterior ends suddenly diverged at a remarkably large angle, and left a considerable triangular opening between their borders and the interarytenoid fold. The dyspnœa, however, was considerable enough to necessitate tracheotomy, which I performed in 1879. The cause of the abductor paralysis was perfectly obscure, and has remained so ever since. Later on a slight change took place in the laryngeal appearance. Absolute immobility of the right arytenoid cartilage, with considerable tumefaction and change of position, supervened, and pointed to ankylosis of the crico-arytenoid articulation having been added to the pre-existent abductor paralysis. With that one exception the condition has remained *in statu quo* all these twenty-seven years, and the case is now shown again as an historical curiosity, illustrating on the one hand that a permanent wearing of a tracheal cannula does not necessarily interfere with the duration and amenities of life, and, on the other, that such grave changes in the larynx as those described may continue for a period so unusually long without undergoing any change and without their cause becoming apparent.

Mr. HERBERT TILLEY said he had already asked Sir Felix Semon whether œdema over the arytenoid cartilages was present before he inserted the tracheotomy tube. Some eight years ago there was a patient in the Great Portland Street Throat Hospital who came with marked dyspnœa, which had to be relieved immediately. He put in a tracheotomy tube, without a general anæsthetic, because the dyspnœa was extreme. A few days afterwards, when the patient was comfortable, it was impossible to

see the larynx: there was marked swelling of the mucosa over the arytenoids, and they presented the appearance frequently seen in tubercular disease of that region. He (the speaker) had kept the man under his notice ever since, and he was in excellent health; indeed he was quite stout. There had never been any further trouble since the insertion of the tube. He had often wondered whether it was due to paralysis of the cords, or whether it was a case of rheumatic inflammation of both crico-arytenoid joints. Sir Felix Semon's case was one of much longer standing than his own, but, judging from the history and present appearance, it appeared to be of an almost identical nature. He mentioned it because there were similar but more recent cases going about. Two years ago he saw a medical man who came in a great hurry because of very difficult breathing. Examination of the larynx showed marked œdema over the left arytenoid. For other reasons he gave large doses of salicylate of soda and the usual general treatment for acute rheumatism. A few days afterwards the patient had rheumatism in the left shoulder-joint, and later in other joints of the body, confirming him in the belief that sometimes one met with acute rheumatic inflammation of the crico-arytenoid joints.

Dr. PETERS said he had a case of double abductor paralysis in a woman who had worn a tracheotomy tube for three years. She experienced attacks of œdema of the arytenoids from time to time since, and previous to the tracheotomy, but he thought she was now developing signs of tabes.

CASE OF ULCERATION OF THE PHARYNX (PROBABLY SPECIFIC) PRESENTING UNUSUAL FEATURES.

Shown by Dr. DUNDAS GRANT. The patient was a man, aged twenty-eight, with destructive ulceration of the pillars of the fauces and both sides of the pharynx, quite superficial though on an area of infiltration on the right side, but extending deeply and presenting very typically the appearance of the breaking down of gummatous infiltration on the left. The exceptional feature in the case was the unusually early date at which the destructive lesions appeared, the initial infection having occurred about eight months previously, when there was no visible primary ulcer, but what appeared to be an ordinary urethritis. There were no secondary appearances on the skin, and the first suggestion that the infection was specific was the occurrence, about seven weeks later, of a sore throat with all the characters of an ordinary-looking tonsillitis, which subsided, leaving behind it a superficial patch on the right anterior faucial pillar, which, however, was not a typical mucous patch. I then had the opportunity of seeing him (August 1, 1905), and in view of the probability of it being syphilitic, recommended that he should be treated accordingly. He improved very considerably until the month of November, when his throat was reported

to be ulcerating. He had been taking mercury continuously by mouth, and was then put upon inunctions and moderate doses of iodide of potassium. In spite of this the ulceration persisted, and was accompanied by such pain that the patient was unable to take sufficient food. He got continuously thinner, developed evening temperatures, and such pulmonary symptoms that his medical adviser suspected tuberculosis, there being dulness on percussion at the right apex, whispered pectoriloquy, and moist sounds; the opsonic index was taken and found to be normal; the throat then presented its present appearance, and it was difficult to exclude the possibility of a tuberculous factor in the case, more especially as the patient had been thrown much in contact with a phthisical employer. A portion of the tissue was removed and examined under the microscope, and its structure found to be characteristic of gumma and not of tubercle. There were no bacilli, but abundant staphylococci.

Sir FELIX SEMON said it was curious that Dr. Grant should have brought the case forward on the day when a lecture of his (Sir Felix's) on the same subject was published in the *British Medical Journal*. In that lecture he dealt with the question which Dr. Grant put before the Society—namely whether gummatous phenomena ever developed so shortly after primary infection. He claimed that the subdivision into secondary and tertiary was purely conventional, and that frequently enough they intermingled. In rarer cases tertiary symptoms developed in the first year after infection; he had himself seen two such cases. In Dr. Grant's case the appearance was so typical of gumma on the posterior wall of the pharynx that he had jocularly made the observation in the other room that if he were examining on this case and the candidate could not say what the condition was, he would not consider it safe to let such a student loose upon the public. What seemed a serious feature of the case was the possibility of an erosion of the vertebral artery, and one should be on the look-out for such a contingency.

Dr. McBRIDE said the case of Dr. Grant and the remarks of Sir Felix Semon reminded him of an interesting example of the rapid destructive ulceration which might follow a primary syphilitic sore. It was one in which the affection occurred either in late spring or early summer, and he was called to see the patient in July, at the patient's own house, in consequence of which he had no notes. By the time he saw the patient he had lost practically the whole palate. The course had certainly not been longer than two or three months. Therapeutically the case was interesting, because his medical man, quite naturally, had been treating him with mercury. When Dr. McBride saw him he suggested the discontinuance of the mercury and the substitution of iodide of potassium. The ulceration then at once ceased.

Dr. LIEVEN (Aix-la-Chapelle) said he thought the ordinary ways of administering mercury would not do in cases like Dr. Grant's. He would use injections of calomel, which seemed to be a specific for such cases. The term "precocious syphilis" seemed to be applicable to such cases, and they gave rise to great trouble in treatment. Injections ought to be

intra-muscular, and should be continued for five or six weeks. For the subsequent treatment inunction could be employed. Calomel injections produced a very rapid effect, and benefit would be revealed in a fortnight's time. Occasionally there were cases in which even that preparation of mercury did not produce any good effect, but caused a reaction in the specific tissue; and that point was brought out by Sir Felix Semon in his lecture. In the cases mentioned by Sir Felix there was produced by iodide an effect which he (Dr. Lieven) spoke of before the German Laryngological Society as a tubercular-like effect; it was followed by a sudden breaking-down of the tissue, with fever. In the first two cases which he saw, independently of Sir Felix's, the nose was affected, and on the day following the treatment there was swelling of that organ. Those cases, as well as Sir Felix Semon's recent ones, were cured by sarsaparilla, known as the Zittmann method. Perhaps that would be tried in the present case if other measures failed.

The PRESIDENT agreed with Sir Felix Semon's remarks, that the old division of the manifestations of syphilis into periods was purely artificial, and that severe ulcerations were sometimes seen in very early stages of the disease. He had been much interested in the remarks concerning treatment, and had found that the dusting on of calomel, or its inhalation, putting three or four grains on a spoon, holding it over a candle, getting the patient to take a mouthful, and blowing it through the nose, did immense good. He had found such cases did better in bed. The sarsaparilla produced much sweating, and that certainly seemed to make other remedies more effective. Sarsaparilla was a very old remedy for syphilis. There was a small dose of iodide in the sarsaparilla as used in Zittmann's method.

Dr. LIEVEN, in further comment, said many doubts had been raised, especially in England, as to the value of sarsaparilla treatment; but he believed that recent observations led to the idea that sarsaparilla had a specific action in syphilis, because it appeared to act in a similiar manner to mercury. If the active substance of it, glycosates, were given in large quantities, it would be likely to cause salivation and enteritis, the former appearing to closely resemble that produced by mercury. He had seen that occur when the patient, in his anxiety to get well, took more than the proper doses.

Dr. GRANT, in reply, said the question in his mind was as to whether there was anything beyond syphilis in the case which led to it taking on a malignant phase at an early period. All had seen the rupial ulceration which sometimes occurred in syphilis, with destructive effects on the ala of the nose, and it had been advised that the specific remedies should be stopped and the patient sent to the seaside. To the suggestion of rest for such cases he would add that of good feeding. In old days, when tertiary ravages were more frequent than now, he had seen cases go from bad to worse, in spite of the fullest doses of remedies. That was so especially in women. But when they began to have good food improvement ensued. A combination which was sometimes very valuable was bark or quinine, and opium, especially in the phagedenic form. He did not know why there should not be a combination of all those remedies. He would ask the medical man in charge of the case to start calomel injections at once.

CASE OF SUPPURATION IN BOTH FRONTAL SINUSES TREATED BY INTRANASAL METHODS, INCLUDING DILATATION OF THE INFUNDIBULUM BY MEANS OF BOUGIES (WITH SKIAGRAM).

Shown by Dr. DUNDAS GRANT. The patient was a gentleman, aged thirty-one, who had suffered from suppuration in the antrum and frontal sinuses, with headache, and difficulty in attending to his work. There were some polypi in the middle meatus, and the anterior extremities of both middle turbinated bodies were removed; the frontal sinuses were syringed out by means of Hartmann's cannula, with considerable benefit. What gave the greatest relief to the headache was the dilatation of the infundibulum by means of the curved bougies exhibited at the meeting. Subsequently the patient learned to introduce a curved Eustachian catheter into each frontal sinus; the position of the instruments *in situ* was shown by means of the skiagram. The patient had so far been free both from discharge and headache, but he still continued the irrigation. He is to present himself at the next meeting of the Society, when more complete notes of his case will be brought forward. (The bougies shown to the Society were made for the exhibitor by Messrs. Mayer and Meltzer.)

Dr. H. PEGLER said he was rather surprised that dilatation of the fronto-nasal canal by graduated bougies had not been resorted to earlier by some rhinologists who were anxious to give a more lengthened trial to irrigation before having recourse to surgical means of a radical nature.

Mr. HERBERT TILLEY said he would have thought that mere dilatation of a canal in that way would have but a temporary effect, one lasting only for hours. He thought the general experience would be that irrigation of such cases was very valuable if they could be got in the first month or two of the infection of the cavities. But after the disease had lasted a long time irrigation was not of much use. He tried it in many chronic cases before adopting external surgery, but he had only one case which was absolutely cured by it, namely six months ago, and the patient was still well. The injections used had included peroxide of hydrogen and almost all the ordinary antiseptics, including an iodoform emulsion, which was left in the sinuses for fifteen minutes, with the patient's head hanging over the edge of the table. Dilatation of the canal might be useful in enabling the surgeon to obtain freer entry into the sinus, but the canal would resume its shape a few moments after the withdrawal of the probe.

Dr. PEGLER, in answer to Dr. Tilley, said he conceived the possibility that the tumefied mucous membrane might yield to the effect of pressure by gradual dilatation and thus assist in the method of irrigation.

The PRESIDENT referred Dr. Grant to a similar skiagram which he exhibited when opening a discussion at Portsmouth on the treatment of frontal sinus disease. A fair proportion of frontal sinus cases could be

cured by irrigation—*i. e.* where a larger cannula than an ordinary Hartmann's would be admitted. And it was interesting to notice how simply patients could be taught to irrigate their own frontal sinus. A young girl patient of his was doing it now, and last year he had a case with double frontal sinus disease which got well by irrigation. He also had a lady whose frontal sinus was full of pus, and she also was now quite well. He thought more cases of the kind were curable by irrigation than one was apt to think. In answer to Dr. Tilley, he said if patients did their own irrigation he recommended that it should be done twice a day.

Dr. PEGLER suggested that the success of the treatment would depend on the state of degeneration of the mucous membrane. If there were polypoid excrescences in the mucous sac, it would be all but impossible to cure it by irrigation. Was there any means of ascertaining the state of the mucous membrane of the frontal sinus before commencing radical surgical measures, as could sometimes be fairly accurately done in regard to the maxillary antrum?

Sir FELIX ŠEMON asked whether the question of the treatment of the frontal sinus was not in a sense analogous to that concerning the antrum. He would say emphatically that in his own experience when an opening through the alveolus had been established, and free drainage thus procured, the majority of the patients got well. Of course all depended, as Dr. Pegler had said, upon the condition of the mucous membrane of the affected cavity. If there was considerable polypoid degeneration, the cases did not get well. But he would vouch for irrigation being efficient if the cases were treated by it sufficiently early, and he did not see why the result should not be the same in the case of the frontal sinus.

Dr. J. B. BALL said he did not think the frontal sinus was quite analogous to the maxillary antrum from the point of view of treatment. He used to think that a great many cases of maxillary antrum suppuration could be cured by irrigation, but of late years he thought otherwise. The cases of dental origin were cured in that way when an opening was made in the alveolus and the teeth and stumps were attended to. But the real mucous membrane affection, which was analogous to most frontal sinus suppurations, did not get well, in his experience, with irrigation, unless it was of comparatively recent origin.

Dr. GRANT, in reply, regretted that the patient attended too late to tell his own history, but he had promised to come to the next meeting, and it would be seen how easily he could introduce the catheter into his own frontal sinus. He suggested that Dr. Tilley should reserve his judgment until he had given the method of dilatation by means of bougies a trial. Of course a comparison with the urethra would show points of analogy as well as of difference. There seemed no reason to condemn the principle, although practically it might have some disadvantages. If a patient were to penetrate the cribriform plate, it would be disastrous; the procedure must, therefore, be carried out very carefully. He had been pleased to hear the President's support of intra-nasal treatment, because he (Dr. Grant) had a weakness for it. In some cases, of course, he had to resort to the external operation, and the question was what means there were of knowing what was the condition of the frontal sinus lining in any particular case. He did not think there was anything very definite to go upon, unless numerous polypoid growths were found in the infundibulum, and then it was reasonable to suppose that the condition extended into the frontal sinus, though not necessarily. Some cases underwent almost spontaneous recovery after the removal of the obstructions. He

agreed with Sir Felix Semon's remark concerning the antrum, that the cases were much more curable by irrigation than many observers supposed, but he did not think the irrigation should always be continued through the alveolar opening. Those who had found disappointment through the alveolar opening would find improvement or cure if they allowed the alveolar opening to close, and carried on irrigation through the perforation made through the inferior meatus. He hoped Dr. Ball would give the plan a good trial.

A CASE OF ULCERATION OF THE LEFT VOCAL CORD.

Shown by W. H. KELSON. The patient, a man aged twenty-eight, had suffered from hoarseness for about three months. There was no sign or history of syphilis, and the chest had been carefully examined, but nothing abnormal detected. On examining the larynx there was to be seen well-marked ulceration at the junction of the middle and posterior thirds of the left cord, the ulcer having thickened edges the right cord was normal. The mucous membrane of the larynx was anæmic. There were no enlarged glands to be felt. The question was as to the nature of the ulceration and, if tuberculous, whether primary or not.

Dr. McBRIDE thought the appearance of the left cord was typically tuberculous, though in the absence of bacilli it was difficult to dogmatise on the matter.

Sir FELIX SEMON, in reply to a question from the President, said that he was not prepared to formulate a definite opinion at first sight. If the man had been fifty-four years of age instead of twenty-seven, he would, in the first place, have thought of malignancy; there seemed to be too much thickening of the posterior part of the left vocal cord to be easily compatible with tuberculosis, though he did not, by any means, entirely reject the latter view. Of course the age of twenty-seven did not quite exclude malignancy. He had himself seen a cylindroid carcinoma of the larynx in a man aged twenty-four. He would suggest that as soon as possible a small portion should be removed for microscopical examination.

Dr. A. BRONNER asked whether it could be a case of pachydermia with ulceration.

Dr. H. SMURTHWAITE said the posterior third was thickened and gave one the idea of a pachydermatous condition; but there was no depression on the opposite side, and the cord did not seem to be inflamed. If it were tuberculous, one would expect to find some inflammatory material beyond the ulceration.

Dr. KELSON expressed his gratitude for the suggestions offered, but he could not agree that the other part of the left cord looked normal. Around the ulcer there was a distinct reddened mass, which stood out in curious contrast to the opposite cord, which appeared to be normal.

Subsequent Note by Dr. Kelson.

On January 13, the day after the meeting, tubercle bacilli were

found in the sputa, which were very scanty. The larynx having been cocaineised, the left ventricular band was raised with a bent probe, and it was found that the ulceration extended into the left ventricle as far as could be seen. The affected parts were then curetted.

CASE OF ULCERATION OF THE PHARYNX AND LARYNX.

Shown by Dr. BALL. The patient, a man aged fifty-one, was first seen at the end of last May. He had been complaining of very slight hoarseness and discomfort in the throat for two months. He had hawked up a little blood on three occasions. There was some swelling of the left side of the epiglottis and of the left ary-epiglottic fold. There was a small and rather superficial area of ulceration at the junction of the epiglottis with the left pharyngo-epiglottic fold. The glands in the left side of the neck were markedly enlarged. The patient was not seen again until last week. The glands in the left side of the neck were very much enlarged, and some enlarged glands were present on the right side also. Behind the left tonsil was an ulcer, elongated from above downwards, slightly raised, with hard base. The epiglottis was uniformly swollen and the left edge ulcerated, the ulceration extending on to the side of the pharynx. The ulceration in this region was not continuous with that behind the tonsil. There was no doubt about the case being epitheliomatous in nature. The points of interest seemed to be the very early involvement of the glands, and the appearance of an ulcerating mass behind the tonsil, the disease having originated in the larynx.

Mr. BETHAM ROBINSON expressed the opinion that it was without doubt epitheliomatous.

The PRESIDENT said that a general hospital perhaps furnished more experience of such conditions than did a special hospital. It was not uncommon for patients to come with an enlarged gland in the neck long before any symptoms or difficulty in swallowing were noticed, in some cases even when one was unable to find ulceration by means of the laryngoscope.

Dr. SMURTHWAITE said he succeeded in catching a momentary glimpse of the larynx. The left half was turban-shaped, and ran into the middle of the epiglottis. It was semi-granular on the surface, and the ulceration looked like a superficial one, probably tubercular. The left tonsil was enlarged, and looked malignant, but he could not see any junction of infiltration between the epiglottis and the tonsil.

Dr. BALL, in reply, said the peculiarity was that it began in the larynx. He feared very few members got a view of the larynx. The epiglottis was swollen and on the left side there was a little ulceration near its junction with the pharyngo-epiglottic fold. It did not look unlike

a tuberculous case in an earlier stage—that is to say, last May. The disease in the larynx was not quite continuous with that in the pharynx.

A MICROSCOPIC SECTION OF AN ANGIO-FIBROMA.

Shown by Dr. E. A. PETERS. This consisted of an irregular network of elongated branching connective-tissue cells, with rod-like nuclei and a granular cell matrix. Many young cells gave evidence of rapid growth. Interspersed among the network were dilated vessels of a venous type. The growth was removed from a boy aged seventeen. He had noticed left nasal inspiratory obstruction for three months. There was no history of bleeding. From the front a dark red fixed swelling could be seen pushing forward to the left middle turbinal bone. Under an anæsthetic an oval sessile tumour of about cartilaginous hardness and the size of a split tangerine was found to be present. It was attached to the periosteum of the basi-occipital and basi-sphenoid. The centre of the mass was the union of the basi-occipital and basi-sphenoid. The palate was split in the failure to adjust a snare, and the pharyngeal growth removed by clipping round the base with scissors. The nasal part was cut off by a sharp spokeshave and ring knife. The finger in the choanæ directed the blade and controlled hæmorrhage. The patient was in the Trendelenburg position during the operation, and made a good recovery.

Dr. PEGLER said it was a pity the growths could not have been exhibited *in situ*, because they were very uncommon. Only two had been recorded by the Society, one of them being Dr. Herbert Tilley's. Under the microscope there was no doubt this was an angio-fibroma, the greater part of the section being made up of fibrous tissue. There was very little literature on the pathology of these tumours of the nasopharynx.

The PRESIDENT said he thought the literature would probably be found under the heading of Pharyngeal Tumours, or Post-Nasal Fibroids. He believed many cases had been described, though possibly not microscopically.

Dr. GRANT asked whether the connection of the growth was completely made out. An interesting point brought out by Dr. Tilley and Dr. Fitzgerald Powell was that the growths seemed to find their way to some extent into the antrum. In a case of his own when he removed it he thought he got it clear away, but it recurred. On the second occasion he made sure by opening the antrum at the same time and scraping it away. Whether it grew from the antrum or not, it had made for itself a large opening in the inner wall of that cavity, and he would be glad to hear whether Dr. Peters' case had that peculiarity.

The PRESIDENT said he had operated upon several similar cases, and it was extraordinary how they absorbed the bony walls of the nose. He had removed them from the sphenoidal sinus and exposed the dura mater, and with success.

Dr. SMURTHWAITE reminded the members that he showed a specimen before the Society two years ago in which the whole of the septum and turbinal bones had disappeared. The large cavity thus made was occupied by polypus *in situ*, springing from the roof of the nose on the right side, and extended over to the left, pressing on the turbinals, which were also almost absorbed. The specimen had been obtained from the dissecting room.

Dr. JOBSON HORNE said he thought one reason why Dr. Pegler found a difficulty in following the literature of the subject was that such growths were formerly largely described under the heading of "sarcomata." They were innocent in course, killing only by pressure and destruction of adjacent parts, not by metastasis. In removing them the all-important point was to get to the mother part of the tumour.

Dr. PEGLER, in reply to Dr. Jobson Horne, said he drew a clear line between the hard growths and the softer ones which Dr. Horne referred to. He had touched upon the two forms of growth pathologically in a recent paper in the *Lancet*. The soft form simulated granulation tissue, and was often mistaken for sarcoma; the other, harder, growth was more angiomatous, but was closely related to fibroma in his belief.

Dr. PETERS, in reply, said the growth was very hard—almost cartilaginous to the finger and scissors. It apparently was attached by a wide base to the periosteum of the basi-occipital and basi-sphenoid to the left of the median line. It had pushed over the vomer to one side and the left middle turbinal forward.

One Hundred and Third Ordinary Meeting, February 2, 1906.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

The following communications were made :

CASE OF LARYNGEAL ULCERATION IN A MAN AGED FIFTY-FOUR.

Shown by Dr. DONELAN. The patient had suffered at intervals from some pain on swallowing for the previous six months; he was first seen about three weeks ago, when there was an ulcer on the right ary-epiglottic fold. On seeing the patient again that evening a remarkable extension of the ulceration on to the pharynx had taken place. There was no history of syphilis, but antisyphilitic remedies had been tried. The opinion of the Society was desired as to the nature of the case, and if it were considered malignant whether any operation should be attempted.

Mr. C. A. PARKER thought the swelling was on the posterior wall of the pharynx, not on the tongue. He regarded it as a gumma breaking down on the right side.

Dr. H. J. DAVIS thought, with Mr. Parker, that the condition was a gumma, especially as the patient experienced no pain in swallowing, and

this he regarded as evidence of its being syphilitic rather than tubercular or malignant.

The PRESIDENT asked whether Dr. Donelan had administered any anti-syphilitic remedies in the case.

Dr. DONELAN, in reply, said the ulceration to which he wished to call attention in the first instance was on the right ary-epiglottic fold, which existed three weeks ago. Since then he had had no opportunity of making a laryngeal examination until that evening, and saw the remarkable extension of the ulceration on the posterior wall of the pharynx for the first time. The history of the case extended back about six months. There was no history of syphilis, but the patient had taken ten grains of potassium iodide and a drachm of perchloride of mercury three times daily for three weeks with no apparent beneficial effect. He had been anxious to know whether any member would suggest any operation.

CASE OF EXTENSIVE SYPHILITIC ULCERATION IN THE PHARYNX OF A
MAN AGED TWENTY-EIGHT, TREATED BY CALOMEL INJECTIONS;
ILLUSTRATING RAPID IMPROVEMENT IN THE PATIENT.

Shown by Dr. DUNDAS GRANT. The patient had presented himself again to show the very gratifying improvement which had taken place, and which had started within a few days after the first injection of calomel, recommended by Dr. Lieven, and favourably referred to by Sir Felix Semon in a lecture recently published.¹ The result had answered fully to Dr. Lieven's expectations.

The exhibitor had recently had under his observation several cases of specific disease of unusual severity, one in which a young gentleman, otherwise in good health and in favourable surroundings, had suffered from numerous rupeal spots explained by a dermatologist as due to the superposition of staphylococcus infection on the specific one. The same patient had had up till recently an œdematous condition of the left half of the epiglottis and left ary-epiglottic fold. Dr. Grant desired to learn whether members of the Society had observed that specific infection was at present of a more severe type than in previous years.

The PRESIDENT said all would be willing to congratulate both Dr. Grant and the patient upon the immense improvement which had taken place in the interval. He would like to hear what amount was injected and the site chosen.

Dr. GRANT replied that the injection was done in the supra-external quadrant of the buttock, the area marked out by Dr. Lieven for the purpose. He used 15m of a 1 in 10 suspension of calomel in paroline. It was done twice a week: it certainly caused some discomfort.

Dr. W. H. KELSON joined in congratulating Dr. Grant on the success of the case, but before commencing to inject obstinate cases of syphilis

¹ *Brit. Med. Journ.*, January 13, 1906.

with calomel he would like to know whether it were true that there had been some disastrous results from this method of treatment.

Mr. PARKER called attention to a recent paper in the *British Medical Journal* by Lieut.-Col. Lambkin, based on an experience of 3000 cases treated by 60,000 injections of mercury in some form. He had found calomel very active, but painful, and apt to set up painful nodules and swellings at the site of injection. He prefers mercury itself suspended in lanolin as being gradually, evenly, and slowly absorbed. After injecting it some 40,000 times he is able to state that he has seen no serious complication of any kind.

Dr. GRANT, in reply, said a paper was published some time ago suggesting that gummata were apt to form at the site of injection of insoluble preparations of mercury, but it seemed to be a very rare occurrence. Dr. Lieven recommended the treatment so confidently that he (Dr. Grant) tried it, and felt indebted to that gentleman in consequence. The discomfort was very small. There was an original paper in the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, in which Dr. Lieven¹ described his methods of treating syphilis of the upper air-passages.

Dr. H. J. DAVIS said the interesting point was this: When Dr. Lieven first saw the case he stated that he did not think it would improve with mercury or iodide of potassium, but that he was certain it would improve with injections of calomel. There had been, so far, only six injections, and yet the patient was practically well.

Dr. GRANT, in further reply, asked whether other members had recently seen cases of syphilis of a greater severity than during the last ten or fifteen years. He had seen several.

SONDERMANN'S SUCTION APPARATUS.

Shown by Dr. DUNDAS GRANT. This consisted of a nose-piece with pneumatic borders and an indiarubber bulb with valves so constructed as to only exercise suction. With this he had been able to relieve discomfort by the withdrawal of secretions from the sinuses of the nose. He described a case to which he had been called that same afternoon; the patient complained of excruciating frontal headache of considerable duration. There was seen in the right middle meatus some creamy pus, but the left one was hidden by a swelling of the middle turbinated body, the frontal pain being greater on the left than the right side. After spraying with cocaine and adrenalin, the patient was instructed to hold his nose and make an expiratory action, but this produced little or no effect, whereas when Sondermann's apparatus was applied, while the patient uttered the sound "ee" or "kee," a purulent secretion was extracted and then snuffed back into the throat and spat out. The patient then found himself considerably relieved. The exhibitor considered the instrument a useful auxiliary in the treatment of such cases.

¹ *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xviii, p. 225.

CASE OF SUPPURATION IN BOTH FRONTAL SINUSES TREATED BY INTRANASAL METHODS, INCLUDING DILATATION OF THE INFUNDIBULUM BY MEANS OF BOUGIES (WITH SKIAGRAM).

Shown by Dr. DUNDAS GRANT. The patient, a gentleman aged thirty-one, was first seen by the exhibitor in November, 1902, when he complained of daily attacks of dizziness and headache, which he had suffered from for the previous two years, the discomfort being worse after stooping down over his work. Both antra were punctured and the left one was full of pus; there was also a swelling of the anterior lip of the hiatus semi-lunaris and probably suppuration in the frontal sinuses. The next day he was more free from giddiness than he had been for two years. The antrum was punctured through the alveolus, and the patient himself regularly carried out the treatment by irrigation for a number of months, during which he experienced a slight improvement. In September, 1903, he was still conscious of an offensive smell in the nose, and this was worse in the morning. The anterior portions of the middle turbinated bodies were removed, and this was followed after a fortnight by some diminution in the amount of discharge. The frontal sinuses were frequently washed out, at first with glycothymoline and then with a weak solution of formalin, 1 in 4000, then in 1 in 2000 and 1 in 1500. In May, 1904, Messrs. Mayer and Meltzer made for the exhibitor some S-shaped bougies for dilating the infundibulum, and these were used up to the fourth size. Almost immediately after this treatment was started, the headache became so slight that he reported it as quite gone. He soon learned the art of introducing a curved cannula into his frontal sinuses for himself, and had been out of Dr. Grant's hands since the middle of 1904. The skiagram showed the cannula in position.

SUPPURATION OF FRONTAL SINUSES TREATED BY IRRIGATION ONLY.

The PRESIDENT showed the case of a man aged thirty who came under his care for suppuration in both maxillary sinuses, both frontal sinuses, and ethmoidal sinuses. The maxillary sinuses were drained through the alveolus. As a large sized cannula could be passed into the frontal sinuses they were, after removal of a part of the middle turbinal, irrigated. The patient learnt to irrigate the sinuses himself with great facility, and as he had a

considerable objection to any external operation this method was continued; after about six months he returned without any pus being washed out. He had not been seen for nine months, and was shown that day as a patient who had reported himself a few days before as well. On examination it was found that there was pus in both nostrils. This the patient attributed to a cold, but the appearance suggested that there was a recurrence of suppuration, or possibly it never got quite well. The patient, however, demonstrated the fact that it was possible for the sinus to be washed out with great facility, and that at least the suppuration could be reduced to a minimum, and, as other cases had shown, might be completely arrested.

The PRESIDENT said there could be no doubt that his patient had got pus in his nose. The man, who was somewhat careless of his condition, thought it was due to cold. He had not seen the patient for nearly a year.

Dr. DENNIS VINRACE said all would welcome conservative surgery in such cases. He asked incidentally whether the patient was correct when he said he passed the catheter himself the first time. He presumed there was some preliminary operation.

The PRESIDENT, in reply to Dr. Vinrace, said the patient must have meant that he succeeded in passing the catheter the first time he tried. But, of course, he showed him two or three times how to do it.

Mr. E. B. WAGGETT said that the success or failure of treatment by irrigation seemed to depend upon the size and shape of the frontal sinuses. He had many cases treated by this method, the patients using a cannula daily. They did very well and were relieved of symptoms, but, with two or three exceptions, he had not seen a real cure.

Mr. HERBERT TILLEY thought the point raised by Mr. Waggett was a very important one. Another determining factor in the successful termination of any case was the extent to which the neighbouring ethmoidal cells were involved. If the contour of a frontal sinus was fairly regular, and the opening into the nose was free and blocked neither by the middle turbinal nor by large granulations around the anterior ethmoidal cells, that sinus ought to be curable by irrigation and free drainage. But if near the opening of the sinus into the nose there were small suppurating ethmoidal cells which were constantly re-infecting the sinus, one could not expect irrigation to produce a successful result. An excellent illustration of that had recently occurred in a medical friend who had been under his (Mr. Tilley's) care during the past ten days, and who had frontal sinus suppuration. The sinus could be easily irrigated, and this was carried out once daily for a week, but the pain in and around the eye was so great and unrelieved by the irrigation that the sinus was opened, and it was found that although it had been irrigated and was comparatively healthy, yet on the floor of the sinus and near its inner end was an ethmoidal cell from which pus exuded when its cavity was probed. There were other ethmoidal cells under the sinus, and those extended back between the eye and the floor of the frontal sinus as far as the sphenoid. Having made a large opening into the nose and destroyed the cells referred to, the headache disappeared, and he had had

no trouble with the patient since. He sewed up the external wound at once, and had done this in the last four cases which he had operated on during January. Thus one not only cleared the sinus, but those most important ethmoidal cells near its floor were destroyed, so that with immediate closure of the external wound such cases might be discharged in a fortnight. He proposed to show four patients at the next meeting who had been dealt with in the manner described.

Mr. CHICHELE NOURSE said that the treatment of frontal sinusitis through the infundibulum had been a subject of interest to him for some years. He spoke of it at the Portsmouth meeting in 1899. He had been in the habit of using probes and cannulæ considerably more curved than those now shown. He had tried irrigation with various liquids, but had never quite succeeded in curing a case by that means. The substances he had found of most value for injection were menthol-valsol (a petroleum preparation) and peroxide of hydrogen solution. In three or four cases he had also tried the plan of introducing a small drainage-tube through the infundibulum by means of a probe shaped like the one he exhibited, upon which two pieces of drainage-tube were threaded. The second piece of tube was used to push the first one onwards into its place. On withdrawing the probe the first piece of drainage-tube was left in the sinus with the end hanging into the nose. At first too long a piece was used, and the patient complained of the free end moving in his nose as he breathed. Accordingly it was gradually shortened. Once it was found to have disappeared entirely into the sinus, but was dislodged by syringing with the oily preparation mentioned above. It was re-introduced and the patient continued to wear it for some time, but eventually it disappeared again, and could not be brought down. As the suppuration was not cured, the sinus was opened in the usual way, and the tube was found lying within it. In subsequent cases he used somewhat longer tubes. After a small tube had been worn for some days, he found that the fronto-nasal canal would admit one of a larger size. However, although it was easy to carry out, he had not found any great advantage gained from this plan. In order to judge whether the probe was in the sinus, a second probe of exactly the same curve and size was laid parallel to the first along the outer side of the nose. On one occasion when performing a radical operation on the frontal sinus, he had introduced one of these probes beforehand through the infundibulum and was able to bring the point out of the frontal wound by depressing the handle. The peroxide of hydrogen solution he used was of the usual strength diluted to one in three.

Dr. SCANES SPICER said he was interested to hear of the reversion to conservative methods. He had always felt rather conservative about the frontal sinus, probably because drainage being so much easier there than in the other sinuses one gave sufficient relief by removing the anterior part of the middle turbinate, freeing the infundibulum and anterior ethmoidal cells so that the sinus was sufficiently drained and improved by intra-nasal operations. He thought unnecessary stress was being laid on intubation of the frontal sinus. If the contents of the anterior ethmoidal cells were thoroughly cleared away, sufficient drainage was usually obtained without actual intubation, which introduced the danger of new or re-infection. At the same time, one must not hesitate to adopt the course Dr. Tilley had rendered popular in cases where there were periodical daily recurrent headaches in which efficient drainage could not be obtained by intra-nasal measures, also where there was septic infection

of the frontal bone, with pain, swelling, and redness externally. There were cases needing external operation in addition to the previously carried out intra-nasal measures. One had had cases under local treatment for many years in which one had become bound eventually to recommend the radical operation. He was very interested in the skiagrams of the tubes *in situ*, though he had not yet felt impelled to get any done of his own cases. With regard to Sondermann's apparatus, he (Dr. Spicer) found one could often exhaust the accessory sinuses, suck out the antrum and frontal sinus by clamping the nose and inspiring strongly with shut mouth. He therefore did not see offhand the need of an apparatus for doing this.

Dr. F. W. BENNETT pointed out that whereas it was difficult to pass a probe into the normal frontal sinus in the case of chronic suppurative lesions it was possible to do it in more than 50 per cent. It could be learned by the patient and easily carried out.

Dr. GRANT, in reply, called the attention of members to the usefulness of the bougies employed in the present case, which he described last time and which aided in preparing the patient for the cannula. Dr. Tilley had well expressed the conditions which one might expect to cure by the treatment. He (Dr. Grant) found quite a sufficient number to encourage such a procedure.

The PRESIDENT, in reply, said that in a certain number of cases where there was pure frontal sinus disease it seemed possible to effect a practical cure. The present case did not represent cure, but the frontal sinus sometimes did get well, even with the removal of the anterior end of the turbinal. He had seen the pus disappear after a couple of washings, and had watched for recurrence without it happening, showing that it was possible for slight cases to recover in that way. In more advanced cases of ethmoidal disease it was necessary to open them up. In answer to Dr. Tilley, he had obtained better results by sewing them up immediately. The present man was operated upon three and a half years ago, and the sinus was washed out through the nose.

CASE OF FIXATION OF RIGHT CRICO-ARYTENOID JOINT DUE TO INFILTRATION, PROBABLY MALIGNANT DISEASE, IN A WOMAN AGED FIFTY.

Shown by Dr. FURNISS POTTER. The patient gave a history of pain and difficulty of swallowing for the last six months, and stated that during this time she had become thinner, otherwise her health had been good. There was no cough and no affection of voice or respiration, no evidence of syphilis. On laryngoscopic examination the region of the right arytenoid cartilage and ary-epiglottic fold was seen to be reddened, swollen, and œdematous. The crico-arytenoid joint was fixed in about the middle line, though on inspiration a flickering movement of the cord was observable which gave an impression as if fixation were not complete; on careful inspection, however, no true movement of the arytenoid could be seen. Examination by the finger gave no sensation of hardness. An

indurated gland could readily be felt immediately behind the angle of the jaw. The chest had been examined with negative result.

During the last few days the patient had complained of considerable pain radiating from the throat to the ear. Potassium iodide had been taken for the last ten days with no appreciable effect.

Sir FELIX SEMON said it was almost impossible to give an opinion on account of the cedema of the arytenoid. But owing to the large gland in the corresponding side and the fixation of the cord, he thought the probabilities were in favour of malignant disease rather than tuberculosis.

Dr. GRANT said the case was almost on all fours with one he showed some time ago, with swelling of the right epiglottic fold, fixing the cord. In the present case the cord was, however, not quite fixed. In his case there was difficulty in swallowing, and he thought at first it was syphilitic perichondritis, but the President's suspicion that it was an extrinsic carcinoma of the lower part of the pharynx and larynx turned out correct. The glands in the present case supported the idea of malignant disease. Perhaps if a definite diagnosis was urgently called for there would be little difficulty in removing one of these glands for microscopic examination.

Mr. WAGGETT said that as cedema was also present on the left side of the cricoid the case was very likely to prove an œsophageal carcinoma; the œsophagoscope should be used before anything further was done.

The PRESIDENT said the case looked like one of epithelioma behind the cricoid, extending up under the mucous membrane. Possibly there would be sprouts of growth there before long.

Dr. FURNESS POTTER, in reply, said the remarks which had been made confirmed his own suspicion. He regarded operation as so much out of the question that he had not mentioned it.

CASE OF INTRINSIC LARYNGEAL NEOPLASM IN A MAN AGED SEVENTY-THREE, SHOWN AT JUNE MEETING, 1905.

Dr. SCANES SPICER described the surface of the anterior half of both cords as covered with dull, rough, patchy areas of yellowish-white colour (? ulceration), with tiny nodular masses projecting, especially on the left cord. There was a slight huskiness, but no cord-paresis, pain, cough, dyspnoea, dysphagia, bleeding, tumour, cachexia, or enlarged glands. The appearances, plus the microscopic diagnosis of papilloma previously made, did not justify the clinical diagnosis of malignancy or call for laryngo-fissure, nor did it appear wise to irritate the larynx by intra-laryngeal measures. The picture was a peculiar one, and as he himself did not grasp its exact significance he would be glad to hear the opinion of the Society.

Sir FELIX SEMON said that if he had seen the case now for the first time his idea would have been that it was a mycosis, not new growth. He suggested that a piece should be again removed for microscopic examination.

Dr. H. PEGLER said the extreme whiteness was explained under the microscope by the character and density of the layer of keratinous cells that covered over the peak-like apices of the papillomatus growth.

The PRESIDENT regretted he had been unable to bring before the Society a lady who showed a similar condition. On the left vocal cord was an irregular nodular growth of peculiar whiteness, but with a movable vocal cord. She had had a similar patch on the right cord, a portion of which was removed and reported to be malignant. This growth had entirely disappeared from the right cord, and without operation. The patch on the left cord was like that in Dr. Spicer's case, only of less degree; it had been present for a year. He would again try to bring the case for inspection.

Dr. Grant pointed out that an almost identical case was illustrated in Krieg's *Atlas*. It was shown there as non-malignant proliferation of the superficial epithelium—a kind of pachydermia or keratosis.

Dr. SCANES SPICER, in reply, thanked members for their suggestions. It did occur to him that the surface appearance resembled mycosis in the tonsil, but in view of the large papilloma which had been removed, and the subsequent ulceration and thickening, and not remembering to have met with mycosis of vocal cords, or read of it, he had not seriously entertained that view until suggested to him by Sir Felix Semon. Perhaps there was a mycotic growth arising on the nidus of the ulcerated papillomatous base. Anyhow, he would remove a small piece, with the patient's consent, and get it examined from that point of view. He was gratified that the Society agreed with him that the appearances and symptoms were not sufficiently those of malignancy to justify an external operation.

A PEDUNCULATED GROWTH OF UVULA IN A MAN AGED NINETEEN.

Shown by Dr. W. H. KELSON. The patient came complaining of running from the nose and was unaware of the presence of the growths, one of which was about the size of a pea, the other of a broad bean, and both were growing from the base of the uvula. They both had pedicles and appeared to be papillomata.

The PRESIDENT asked if they were attached to the base of the uvula. These growths he had not infrequently seen, and had looked upon them as harmless.

Sir FELIX SEMON said that some years ago Mr. Stephen Paget rather alarmed the profession by insisting on the possible malignant transformation of such growths, and since then he (Sir Felix) had, as a matter of precaution, removed them. But he regarded the danger of transformation as exceedingly remote.

CASE OF EPITHELIOMA OF THE NASO-PHARYNX, WITH MICROSCOPIC SECTION.

Shown by Mr. STUART LOW. The patient, a man aged forty-four, complained merely of slight deafness in both ears of recent

date. On examination, the soft palate was found to be almost motionless, and in the naso-pharynx a large raised ulcerated surface was discovered on the posterior wall. On palpation this was felt to have a very firm outline and base, giving an almost horny feeling in places. It was ulcerating at certain parts, and bled freely when touched. The naso-pharyngeal canal was felt to be greatly narrowed, and the induration had infiltrated the lateral wall on the left side and the posterior palatal pillars. The hard outline of the growth could also be plainly made out through the soft palate on backward pressure with the finger. There was an entire absence of glandular enlargement. The absence of subjective symptoms was remarkable. There was no discomfort in breathing or swallowing, no pain, no nasal obstruction nor nasal intonation. He said that he had lost a stone in weight in three weeks, and since coming under observation fourteen days ago he had lost half a stone. He had worked for years in a very foul and very dusty atmosphere, being a cleaner and sweeper of railway carriages. His wife had been for some months in a lunatic asylum, and this had worried him very much. He had had a great deal of domestic work to do in addition to long hours of labour, having five young children at home, and being too poor to pay anyone to attend to them. The family and personal history threw no light on the case.

Schmidt had reported having found one case of epithelioma in forty of naso-pharyngeal tumours, but a Spanish writer had recently found as many as five in twenty cases. There was a noticeable predilection for the male sex in these statistics. Mr. Stuart Low remarked that the inveterate cigarette smoking with nasal exhalation of the tobacco smoke by the Spaniards might help to account for this prevalence.

The man was now on 20-gr. doses of iodide of potassium three times a day, but was still losing weight. Mr. Stuart Low asked for the opinion of the members on the feasibility of operation. A piece of the growth had been removed for microscopical examination, and Dr. Wyatt Wingrave had given the following report; the specimen would be submitted to the Morbid Growths Committee for their opinion.

Report by Dr. Wyatt Wingrave.

The growth consists chiefly of closely-packed epithelioid cells channelled in varying degrees by microblastic tissue, so that it is loose in texture in some parts, almost solid in others.

The cells are round, fusiform, or oval, according to their respective position or compression, their nuclei being round or oval, according to the axis of section; several exhibit very irregular, mitotic forms.

The mesoblastic stroma consists of white fibres with leucocytes and lymphocytes, supporting blood- or lymph-vessels whose walls are thickened by fusiform cells. In some parts the lymphocytes are very numerous, and there are groups of multinucleated masses which are probably "fusion" cells.

The growth probably originated in the peri- or endothelium of these vessels, since in some parts the perithelial cells are not only thickened, but appear to be traceable into the neoplastic elements.

It differs from ordinary squamous epithelioma in that there is no tendency to concentric lamination or "nesting" of the cells, and they do not exhibit any horny or keratin changes.

The PRESIDENT thought there could be little doubt as to the nature of it. He could not recall many instances of it, but two were quite familiar to him, both inoperable. One of them came with a lump in the neck, but no complaint about the throat. He found carcinoma in the naso-pharynx. He had many sections of rodent ulcer from various parts of the body, and Mr. Low's section resembled some of them. It demonstrated the importance of post-nasal examination in deafness.

Dr. PEGLER said there was a strong suspicion of malignancy about the case, but the Morbid Growths Committee would report.

CASE OF INJECTION OF COLD PARAFFIN FOR NASAL DEFORMITY.

Shown by Dr. DUNDAS GRANT. The patient, aged twenty-four, was the one whose photographs were brought before the Society in January, 1904, after he had had subcutaneous paraffin injections for rectification of the deformity due to a depression of the bridge of the nose, resulting from injury seven years ago. The improvement in the appearance was then considerable, and as long as he continued in his occupation of ship's steward it appeared to be lasting. Unfortunately, in spite of being strictly advised to avoid exposure to heat, he became a stoker in the Royal Navy, and was exposed to temperatures of as high as 180° Fahr. The paraffin appears to have yielded and the nose returned to its previous shape. He came under observation again a week ago, and was at once treated by means of an injection of cold friable paraffin by means of Mahu's syringe, the result for the moment being extremely satisfactory and the patient having decided to give up his occupation of stoker, Dr. Grant had some hopes that it

might be lasting. He would be glad to know what had been the ultimate results in the experience of those who had observed such cases, and he proposed inquiring with regard to the few cases he had had under his own treatment, and reporting to the Society. Meanwhile, he recommended the ingenious instrument devised by Mahu, which was a modification and, in his opinion, an improvement upon the original one of Boeckhardt, and which, until the invention of a better one, was most probably the most perfect at their disposal. The friability of the paraffin was an important point, inasmuch as it allowed of the breaking off of the thread inside the subcutaneous space instead of its remaining and forming a plug in the needle-puncture in the skin.

Sir FELIX SEMON said he was not an inveterate opponent of any good innovation in surgery, but he would read a translation of the peroration of a recent article by Dr. L. Kirschner, of Berlin :

"It is easy to see the importance of the results gained by these histological investigations with regard to treatment. We have seen that neither of the two kinds of paraffin which are used nowadays therapeutically, neither the hard nor the soft paraffin, belong to the foreign bodies which, subcutaneously injected into the organism, 'heal in'—i. e. heal in in that sense that they form a capsule, which separates them from the rest of the tissue. We must remember that we include under the expression 'healing in' various pathological processes. To choose a ready example—when we use a catgut thread, we understand by its healing in its complete resorption; of a lead bullet, on the other hand, we expect that it heals in by surrounding itself by a connective-tissue capsule in the shape of a mantle. In the one case, therefore, healing in means complete resorption and assimilation of the substance which it is intended to heal in; in the other case it means its complete preservation.

"What kind of pathological process is the injected paraffin intended to produce in order to be therapeutically effective? The injected paraffin is intended to repair deformities, fill up defects, replace, so to say, lost tissue, support sunken-in structures, etc. This task could be lastingly solved by paraffin only if after injection it remained *in loco unchanged in extent and consistency*, if, as has been erroneously supposed, it became encapsulated. We have just seen that the reverse is the case. We may, however, go even further. It would be quite conceivable that the commencing organisation, that is to say, the perforation of the paraffin by connective tissue which unavoidably follows the injection, might be considered as a very desirable process, advancing the therapeutic object. But, as we have seen, the connective-tissue organisation does not become arrested at any given moment; it irresistibly proceeds, following its own laws; it leads to *complete resorption* of the foreign body which has been introduced. Further, we have seen that *both kinds of paraffin* are not at all *lastingly tolerated* in several parts of the body in which they are used with predilection, because they produce severe local tissue disturbances which render their *premature removal* necessary. But even where this does not occur, and where paraffin is being tolerated for some length of time without doing harm to the neighbourhood, a brief consideration of the fate of the young connective tissue which becomes developed during the organisation of this foreign body, viz. the unavoidable change of the inflammatory tissue produced into a shrinking scar, must show more distinctly than anything else how fallacious are the therapeutical surmises which have led to the use of paraffin."¹

The practical conclusion to be drawn from this seemed to be that every surgeon who had made a large number of such injections should ask all his patients some years later to show themselves, so that an opinion could be formed as to the lasting effect of these injections. From

¹ Virchow's Archiv, Bd. 182, Heft 3.

the mere fact that failures had not oftener been reported it was obviously unsafe to draw conclusions as to the stability of the primary effect. It was certainly possible that some had been unsuccessful and that the patients had consulted other advisers. He suggested such an inquiry by members of the Society.

Dr. DONELAN said he had had a case over two years ago which illustrated some of the points referred to. A young man had fractured his nose, leaving a saddle-shaped depression. Paraffin of 112° F. melting point was injected. He was quite pleased with the result as regards the nose, but owing to the fracture some of the paraffin worked out at the level of the lower border of left nasal bone forming a curious ridge on the cheek. Every form of heat that could be devised without blistering the cheek was tried so as to alter the shape of this "spur" without effect. At length it was dissected out under aseptic conditions, leaving practically no mark. Under the microscope sections of the removed "spur" showed that it existed in a finely granular condition intimately diffused through the connective tissue. He had used the instrument shown by Dr. Grant to inject the inferior turbinates in a case of atrophic rhinitis. It was much simpler and cleaner than the hot paraffin injections, but he thought the melting point of the paraffin charges was much lower than the degree claimed for them.

Dr. SCANES SPICER reminded members of the case he had shown at this Society, January 10, 1902, with models and photographs before and after, (Cheltenham Meeting, British Medical Association, 1901), the first case of the kind done in England, and the results of which some might remember. In this first case, although the improvement in contour remained, within a year the paraffin wandered into the eyelids, causing oedema of these to the extent of closing the palpebral fissures, with interspersed solid nodules. Not liking to undertake a dissecting operation in the eyelids, he asked his colleague, Mr. Juler, to remove these nodules, and the result was a perfect recovery. He had sections showing paraffin diffused in a molecular spheroidal form; diffraction bands were seen all round the globules imbedded in dense connective tissue. He had injected seven or eight cases altogether, but he became disappointed with the procedure chiefly because of the scalding of the patient by the heated injection cannula and the subsequent pain; in fact, after the first case an anæsthetic was always needed and given. One lad from the country he injected three or four times, and the result was especially unsatisfactory, as the points of injection suppurated in spite of antiseptic precautions, and the shape of the nose remained as before. The use of solid paraffin appeared to be a great improvement. In suitable cases, especially in young women who had the extreme saddle bone of congenital syphilis, he thought paraffin injection would remain a legitimate and useful procedure. He did not think anyone should attempt it for minor degrees of irregularity or to gratify a whim—to convert an ordinary into a Roman or Greek profile. It would be observed that in Dr. Grant's case, as in his own and in most other operators' cases, the result could hardly be described as refined or elegant. He would therefore limit the use of paraffin injection into the nose to cases of gross deformity.

Dr. VINRACE supported the suggestion that those who had adopted the method should report on their cases after a substantial interval. He said it should be borne in mind that these operations were not done in conditions which threatened life, and even from the sentimental point of view he did not know that it was right to give to a girl a semblance

of beauty by which to deceive the opposite sex. He had not yet seen an instance of the operation where it seemed to have been justifiable, and he would be delighted to see cases where it had been done some years ago with satisfactory and permanent results.

Sir FELIX SEMON desired to ask why, when a quantity of this new cold and soft paraffin was injected into the nose, or any other part, it was supposed that the paraffin would remain stationary, as moulded by the surgeon at the operation? When the paraffin was put from the bottle into one's hand it could be moulded to any form. He would have thought that even such pressure as that exerted by a pillow at night time on the nose would interfere with its form, and, of course, much more so a blow or fall, causing more serious disfigurement than had existed before the injection had been made.

Dr. GRANT replied that it was his intention to get the records of such cases. He had not done many of them. He did not think anybody professed that the form of paraffin he had just shown would be more solid or even as solid as those with a higher melting-point. The great point was the immense convenience of being able to inject it without heating and without scalding the patient. It could be done under cocaine. It had been said that the ease with which it could be done would enable quacks to do it, but that was scarcely a scientific objection. As to the propriety of having it done, if one were similarly disfigured oneself one would be glad to have it used, and that was surely a good reason for giving others the benefit of it, even if at the end of two years it might have to be refreshed again. The method must be tested in the calmest way possible, and he proposed to bring forward his cases for his own and the Society's inspection.

SUPPURATION OF THE LEFT FRONTAL AND THE LEFT MAXILLARY SINUSES. CLOSURE OF THE WOUND AND IRRIGATION.

Shown by the PRESIDENT. A man, aged forty, was brought to me in June, 1900, by Dr. Hugh Smith, of Highgate, who had drained the left antrum through the alveolus for empyema. Recovery not taking place, I removed the anterior end of the middle turbinal, and irrigated the frontal sinus, finding it full of pus. Dr. Gregory carried out irrigation of the frontal sinus, and introduced iodoform without effecting a cure. In December the frontal sinus was opened above the left brow, the lining membrane was entirely removed, the opening into the nasal cavity enlarged, the middle turbinal was next removed, the antrum was opened through the incisor fossa and an opening made from the cavity into the inferior meatus, a part of the inferior turbinal being removed. The frontal sinus was irrigated daily, and primary union took place. The nasal suppuration had been of eight years' duration, and no recurrence had followed the operation. He was shown chiefly to indicate the small amount of scar and the success of the method adopted. Mr. Symonds referred to this method as

superior to that of packing or the use of drainage-tubes in the nose and said that it was the plan he usually adopted. He had found some years ago that drainage was unsatisfactory by rubber tubes, and that packing led to infection of the skin and recurrence of suppuration. It was also pointed out that the anterior wall was not completely removed, but only sufficiently to give free access to every part of the cavity, and to enable a free opening into the nose to be made.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Twenty-third Ordinary Meeting, held at the Medical Society's Rooms, No. 11, Chandos Street, Cavendish Square, W., Monday, December 4, 1905.

The President, Dr. THOMAS BARR, in the Chair.

(Continued from page 53.)

SKETCH AND SPECIMEN OF A CASE OF NECROSIS OF THE HANDLE OF THE MALLEUS.

BY MACLEOD YEARSLEY.

The patient, a man aged forty-five, complained of ringing tinnitus and slight deafness in the right ear. The noise was not very troublesome, but was worse at night. The symptoms had lasted for two months. No other history could be obtained. There had been no pain, and he denied ever having had a discharge or receiving any blow on the ear. On examination, the right membrane was dull and thickened, and just below the short process appeared a small piece of brownish substance that had the appearance of wax. Attempts to wipe it off with wool and pick it off with forceps were unsuccessful. Hydrogen peroxide was put in the ear for twenty minutes with the object of loosening the supposed cerumen. On renewing the attempt to pick it away with forceps the necrosed handle of the malleus, of which the jagged upper end had simulated a piece of wax, came out of the membrane as easily as the finger out of a glove. No trouble occurred as regards healing, and the deafness and tinnitus disappeared with subsequent catheterisation. Mr. Yearsley asked if any other member had ever met with a similar case, and whether the Society could offer any suggestion as to the cause.

Mr. RICHARD LAKE exhibited *Skulls showing the different stages of an Operation for opening the Vestibule.*

STEREOGRAMS ILLUSTRATING FIVE CASES OF THE RADICAL MASTOID OPERATION AND ONE OF A POLYPUS ATTACHED TO A DISEASED MALLEUS.

By KERR LOVE.

Four of the following cases of the radical mastoid operation were operated on in the wards of the Royal Infirmary, without selection and in the order in which they were admitted, between June 5 and 19, 1905. The fifth case was operated on in the Queen's Park Home, on September 17, 1905. The cases are brought together because they were used for the production of stereoscopic pictures of the radical operation. The cases have nothing in common except that they all seemed to me to require the operation, and were cases of chronic middle-ear suppuration which had long resisted non-operative treatment.

Two were chronic middle-ear suppurations, which had not been treated, but in which acute mastoiditis developed. One was a mastoid periostitis following an acute middle-ear suppuration. In all the radical mastoid operation was conducted on the same lines, and in all healing and the cessation of discharge took place in from four to nine weeks.

CASE 1.—J. H——, aged sixteen, transferred from a medical ward to the ear ward with mastoid tenderness and a history of chronic middle-ear suppuration in left ear, lasting since childhood. On the medical side she was under treatment for fits. Operation, June 6: Mastoid process sclerosed with a little pus in a deeply-placed antrum. Necrosed incus removed. Healing complete in four weeks.

CASE 2.—J. O'B——, aged twenty-one, admitted from outpatient department with mastoid tenderness, copious discharge from right ear, and a polypus protruding from the external auditory canal. Duration of disease nineteen years. Operation, June 12: Mastoid cells well marked, filled with granulation masses and pus. Healing in nine weeks.

CASE 3.—J. B. S——, aged eighteen, admitted June 10, with sinus on mastoid process of right side. A few days before an

abscess was opened at the out-patient department, but as the bone seemed swollen and as the discharge was copious pus in the cells was suspected. Operation, June 15: Nothing found in the cells or antrum.

CASE 4.—A. McG——, aged nine, has been under my care since March for chronic suppuration of the right middle ear. On March 17 I removed post-nasal adenoids, as well as granulation masses which were protruding through the posterior superior quadrant of the right tympanic membrane. Epidermic masses were also removed from the left ear. The disease dated from an attack of scarlet fever four years ago. As continuous treatment till May did not cause healing, and as the granulation masses recurred, I advised operation. Operation, June 19: Mastoid cells found to contain pus, and the antrum granulation masses. Healing and cessation of discharge took place in seven weeks.

CASE 5.—C. C——, aged four, has been under my care for a year for chronic middle-ear suppuration, which commenced when she was a year old. There were two perforations—one just behind the malleus, over the incus, which was necrosed, and one in front of the malleus. At first the discharge greatly diminished, and indeed almost ceased, but in time a granulation mass developed, and hung from the roof of the middle ear. Operation was therefore decided upon. Operation, September 17: Mastoid cells very well developed. Before opening the bone a blue discoloration shone through the otherwise normal bone-surface, and when the cells were opened they were filled from the tip of the process to the zygoma and back to the sinus mastoid wall with dark-red granulation masses. Healing and cessation of discharge took place in seven weeks. The large cells filled with diseased products at four years is noteworthy.

The stereograms are meant to display the steps of the radical operation from the making of the post-auricular incision to the stitching up of the same. A drainage-tube is kept in the external auditory canal for a week, but the wounds are never packed, and no syringing, nor spirit drops, nor medicament of any kind is used. After the first two dressings, when the tube is removed, the deeper parts are carefully dried out with fine cotton tips, but the syringe is never used. Skin-grafting was not adopted in any of the cases.

The PRESIDENT remarked on the interest which the members felt in Dr. Kerr Love's stereograms, and said he was impressed by

the rapidity of the healing in these cases. The absence of packing was also an important point. Had there been time, it would have been profitable to have had an interchange of views on this and other matters in connection with these cases.

A CASE OF ACUTE OTITIS MEDIA SUPPURATIVA, WITH PROLONGED HIGH TEMPERATURE, BUT WITHOUT OTHER SERIOUS SYMPTOMS.

BY HAROLD MOLE.

On October 26, 1904, I was called to Weston-super-Mare by Dr. E. F. Martin to see A. D—, aged nine, with a view to operating on his mastoid. He had then a discharge from his right ear, a temperature of 104° F., slight facial paralysis on the right side, and enlarged glands the same side of the neck. The history was that ten days previously he had had an earache but that it got better; he went to the baths, the earache returned, and four days ago the drum burst and a discharge took place. The pain in the ear was never severe. Two days ago the temperature, then taken for the first time, was 104° F., with a profuse discharge from the ear. When I first saw him the upper posterior part of the right drum was bulging considerably, and there was a small perforation in the centre of the bulging portion. The discharge was slight, and there was little or no pain. I could not detect any tenderness over the mastoid, the side of the head, or the neck, except a little in the latter situation in connection with the enlarged glands. There was no indication of pneumonia or any acute specific fever, and the boy did not look particularly ill. Under an anaesthetic I freely incised the drum posteriorly through the bulging portion and perforation, and requested that two leeches be put on the mastoid behind the auricle, and that a Widal examination of the blood be made.

On October 28, two days later, I was again called down to see the patient as the evening temperature still remained high. The facial paralysis was more marked, but the boy seemed no worse, there was very little discharge from the ear, and the incision in the drum had partly healed. There were still no localising signs. The Widal was negative.

On November 2 I was summoned for the third time, as Dr. Martin thought he had elicited tenderness over the mastoid process. The evening temperature was still high, but on looking at the chart there was a general tendency towards defervescence. I could not myself discover any mastoid tenderness, and for the third

time I declined to operate. I subsequently heard that he quite recovered, that his facial paralysis cleared up, and that his hearing became normal.

Here was a boy whose illness commenced with earache, never at any time severe, followed by perforation of the drum, and whose temperature at the first taking was 104° F., and remained in the evening between 103° F. and 104° F. for a week, gradually subsiding by lysis at the end of about three weeks. There was facial paralysis from the first but there were never any rigors, never tenderness over the mastoid or side of the head, or along the jugular vein in the neck, and with the exception of the continuous high temperature, there was nothing to indicate any serious complication of otitis media. As the sequel has shown, I was right in not operating; but I found it very difficult to resist the views of the practitioners with whom I saw the case, and I did at one time think it possible there might be an extra-dural abscess. But the boy's aspect did not suggest it; in fact, he never looked as though there was anything very serious the matter with him when I saw him; and had it not been for the thermometer I think the case would have passed as an ordinary uncomplicated acute otitis. The early facial paralysis was probably accounted for by a dehiscence in the wall of the facial canal. The only diagnosis I was able to suggest was influenza. As I have before mentioned, there were never signs of any of the other specific fevers, and I feel fairly confident that the aural condition was not the cause of the pyrexia.

Mr. CRESSWELL BABER asked whether there was a history of influenza before Mr. Mole saw the child. If not, it would seem that the attack was due to the bathing. No doubt Mr. Mole's explanation of the facial paresis was the correct one. In cases of acute otitis he (Mr. Baber) had found great benefit for many years from the drops recommended in the book of the President, consisting of cocaine, carbolic acid, and glycerine, and that a cure resulted from them in some cases in which he thought he would have to operate. He would be glad to hear whether the boy's hearing had completely recovered.

Mr. YEARSLEY said one's general experience was against the diagnosis of influenza in this case, for when influenza attacked the middle ear with suppuration it was more severe and caused greater destruction.

Dr. DUNDAS GRANT remarked that Mr. Mole did not state what was the appearance of the membrane the last time he saw the case, when there was suspicious mastoid tenderness. If the appear-

ance of the membrane continued fairly normal, and the incision was nearly healed, he was probably justified in taking up the expectant attitude which he adopted. If, however, there was persistence of suppuration to any extent, probably drainage of the mastoid cells would have been more advisable.

Dr. A. BRONNER asked whether there was intense pain, as in most cases of purulent otitis media due to influenza the pain was much more severe and lasted longer than in ordinary cases.

Mr. C. E. WEST asked whether any culture had been taken from the discharge.

The PRESIDENT said his experience was that influenza accounted for many of the cases of empyema of the mastoid cells supervening upon acute purulent otitis media. The temperature in the case was high for simple otitis media, although in certain temperaments it might rise to 103° or even 104° F. Occasionally facial paralysis occurred in ordinary acute otitis media and passed off, and was then probably due, in many cases, to the nerve in the Fallopian canal being partially uncovered by bone, perhaps from faulty development, the neurilemma of the nerve being in contact with the mucous membrane of the middle ear, and being thereby involved in the inflammation of the latter.

Mr. G. JACKSON asked whether there was any throat mischief to account for the condition.

Mr. MOLE, in reply, said no culture had been taken from the discharge. He admitted the previous history was imperfect, but the boy was in a convent school, and Dr. Martin was not called in to the case until late. No history was obtainable except that there had been earache, and the symptoms came on after going to the bath. There was nothing wrong in the throat. With regard to the diagnosis, he thought for a high temperature to persist for two or three weeks in a boy, with but little discharge from the ear and no other symptoms, was rather unusual. He had seen several cases of influenzal otitis media which did not bear out the remarks of Mr. Yearsley. There was an outbreak of the condition amongst nurses at the Bristol Royal Infirmary, which he had seen, and the cases cleared up in the way in which acute otitis media ordinarily did when seen and treated early. Last time he saw the boy there was scarcely any sign of perforation. There was never any really acute pain; indeed, it was more like that of tuberculous trouble.

NOTES ON A CASE OF SEVERE VERTIGO, DUE TO ASPERGILLUS OF THE
EXTERNAL AUDITORY MEATUS.

BY ADOLPH BRONNER.

Cases of aspergillus of the external auditory meatus are not common in this country. The case which I saw some months ago also presented some rather unusual symptoms. Mr. V—, a man aged about fifty-five, consulted me in October, 1904. He had noticed slight increasing deafness of the right ear, with intense tickling, for two or three months. During the last three weeks he had intermittent tinnitus, chiefly buzzing noises, and frequent attacks of severe vertigo. The latter were generally of short duration, one to five minutes, but sometimes they lasted for two or three hours. They came on quite suddenly. A few times he was violently sick. The walls of the meatus were covered with a grey-black skin, which partly obscured the membrana tympani. The skin was removed by the forceps and syringe. The surface of the drum was dark and irregular, and there was evidently much proliferation of the epithelium. A loud-ticking watch was heard at five inches. The tuning fork tests were nearly normal, both by bone and air-conduction. The skin was examined and it was found to be a case of *Aspergillus niger*. Ear-drops of absolute alcohol were ordered. When I saw the patient ten days later the hearing was much better; the watch was heard at thirty inches; he had had no more attacks of vertigo or tinnitus. After the use of the Eustachian catheter the hearing became practically normal.

Dr. KERR LOVE handed round photographs of the aspergillus from the middle ear, in illustration of Dr. Bronner's contribution.

Dr. URBAN PRITCHARD suggested as regarded treatment the addition of 1 in 1000 of biniodide, or perchloride of mercury, to the alcoholic instillation used.

Mr. RICHARD LAKE showed *Specimens and Drawings of a Case of Aspergillus Niger*.

CASE OF CHRONIC INFLAMMATION OF THE EXTERNAL AUDITORY
MEATUS ON BOTH SIDES, WITH MARKED STENOSIS.

BY W. H. KELSON.

Dr. W. H. KELSON showed a woman, aged thirty-nine, who for eleven years had an intermittent discharge from both ears and in

whom the external auditory meatus was markedly contracted. The lower parts of both auricles had an eczematous appearance and were thickened, but patient had not suffered from eczema on any other part of her body; the lumen of the external auditory meatus on each side was reduced to a pin-hole opening through which it was impossible to get a view of the membrana tympani. The patient was steadily becoming deafer to aerial conduction, but bone-conduction was good; on inflation by Eustachian catheter no sound indicative of perforation could be heard.

PROCEEDINGS OF THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

General Meeting held on Friday, January 5, 1906, at the Medical Society's rooms, 11, Chandos Street, Cavendish Square, W.

The President, Dr. R. H. WOODS, in the Chair.

The following communications were made:

Dr. FREDERICK SPICER showed a *Case of Disease of the Septum, for diagnosis.*

Mr. STUART-LOW said that he considered this to be a case of senile tuberculosis of the nasal septum, with atrophic changes in the cartilages. The mucous membrane also showed some atrophic alterations. The columnar cartilage was distinctly shrunken and softened, and the lateral cartilages had fallen away from the nasal bones.

Mr. H. BARWELL had seen no sign of atrophic rhinitis; there was a chronic thickening of the septum, such as might be due to traumatism, and it seemed to have changed little over a long period.

Mr. CLAYTON FOX entirely agreed with what Mr. Barwell had said. Probably there had been a lost history of trauma; as the result of a blow effusion of blood took place, with subsequent absorption and fibrosis, leaving a thickening of the septum.

Mr. DENNIS VINRACE attributed the condition to traumatism in an unhealthy subject. The deformity and hypertrophy of the parts were fully explained on such assumption. The nasal bones were thickened and expanded, and the nasal fossæ were filled with

an enlarged septum, and the turbinated bones probably hid from view a mass of polypi.

The PRESIDENT thought there had been an injury to the bridge of the nose and fracture of the septum. The incrustation he thought due to picking with the finger-nail.

Dr. FREDERICK SPICER showed a *Case of (?) Congenital Malformation of the Soft Palate*.

Mr. DENNIS VINRACE opened the discussion by asking whether there was evidence that the defects existed at birth. He entirely discredited the "congenital" theory, and assigned the perforations of the palate to some acute disease—*e.g.*, scarlatina. Such fevers gave rise to bilateral destructive ulceration of the fauces, and the ragged foramina present might readily be accounted for by that cause.

Dr. WYATT WINGRAVE agreed that the title was appropriate, in so far that the malformation originated before birth; that its origin was specific might also be true, but he had seen so many similar cases in patients who afforded no evidence of a specific history that he hesitated to accept the signs of syphilis present in this patient as more than presumptive. Any inflammatory process might interfere with the normal development of this particular cleft.

Mr. CLAYTON FOX, whilst fully recognising the importance of the bilateral foramina being in favour of a congenital process, saw no reason why a pathological process such as ulcerations arising from the exanthemata, scarlet fever, and diphtheria should not be competent to produce the condition. A point much against the congenital theory was the fact that the margins of perforations were distinctly cicatricial.

Dr. W. H. KELSON considered the fenestration was due to ulceration, as their edges were decidedly cicatricial. This was supported by the history of a severe attack of diphtheria at four years of age.

Mr. STUART-LOW said that he considered that this well exemplified a defect in development. The muscular structures of the soft palate were derived from the superior constrictor of the pharynx, and these deficiencies in the palatal pillars were sometimes to be accounted for by too little muscular tissue being introduced into the palate from the superior constrictor to form a complete sheet of muscle.

Dr. MALCOLM FARQUHARSON, like the last speaker, was of the opinion

that the case was one of congenital malformation, and more especially as it was so symmetrical. There was no appearance of corneal affection. He believed it to be a separate investment of the palatoglossus and palato-pharyngeus muscles. There was no history or appearance of specific disease even in spite of the rhagades present. It was almost identical with a case he had had under his care within the past year, and where there was no question of a specific origin.

The PRESIDENT thought that the presence of vaccination scars at the angles of the mouth was pathognomonic of congenital syphilis. But at the same time he was strongly of opinion that the foramina were not caused by syphilis. The picture was precisely as if it had been caused by a bad scarlatinal throat. There was no history of scarlatina, but there was one of diphtheria, and the infection may have been mixed or the diagnosis incorrect.

Mr. CHICHELE NOURSE considered that, although the symmetrical perforation of the anterior pillars might possibly be congenital, a more probable explanation in this case was that suggested by Dr. Vinrace—that it was due to ulceration following one of the exanthemata. Moreover, the patient stated that some time ago she suffered from a diphtheritic throat. The existence of the scars at the angles of the mouth, although showing that the patient had suffered from congenital syphilis, did not appear to be connected with the condition of the palate.

Dr. W. H. KELSON showed a *Case of Ulceration of the Nasal Septum*.

The patient had suffered from suppurative disease of the middle ear and post-nasal catarrh for four years and had had smallpox, but there was no evidence of syphilis. On examination of the nose there was seen to be a circular ulcer on the right side of the septum; it was about the size of a threepenny-bit, and situated one inch from the inner margin of the vestibule and a quarter of an inch from the floor of the nose. Opinions as to its nature were invited.

Mr. DENNIS VINRACE said the ulcer was within reach of the finger-nail and had very possibly been perpetuated by that agency.

In reply, Dr. KELSON thought its site was out of reach of the finger-nail, but that it might have resulted from smallpox.

Dr. ANDREW WYLIE showed a *Case of Excision of Rodent Ulcer on the Nose*.

The patient, a woman, aged sixty, had always enjoyed good

health. For several years she noticed a small pimple on the base of her nose, which occasionally got rubbed off while washing. Two years ago it began to spread, and in October last year, when she was first seen, the ulcer was three eighths of an inch in diameter, hard edges, little inflammation, no discharge, no pain. On November 17, under chloroform, the ulcer was completely excised well beyond the hard edges and the wound drawn together by silk-worm-gut sutures; to get the edges together and prevent a granulating wound on the bridge of the nose two lateral incisions were made to relieve the tension. The wound healed in five days and the lateral incisions granulated over in a fortnight. This ulcer was similar to what is described by Bergmann as a senile epithelioma of the skin—a rare condition—but on microscopic examination no epithelioma could be detected.

Mr. CHICHELE NOURSE said that he was interested in this case because it happened that he also had recently had a case of rodent ulcer of the nose, situated on the dorsum and right side, nearer to the tip, which he had treated in the same way. The clinical appearances in the two cases were slightly different. Both presented the characteristic rolled edge, but in his case the centre was occupied by what looked like an ulcer, consisting, however, of closely-set red papillæ, between which a probe sank in. This was unlike Dr. Wylie's case, in which the somewhat depressed centre was covered by scaly epidermis. Dr. Wingrave was showing microscopic specimens of both cases.

Mr. DENNIS VINRACE congratulated Dr. Wylie upon the result of the operation. There were, however, some suspicious nodules on the margin of the cicatrix, and, if practicable, he advised their excision.

Dr. WYATT WINGRAVE congratulated Dr. Wylie upon the satisfactory result clinically and cosmetically, and although his own clinical experience had led him to be quite satisfied with thorough curettage and escharotic applications, he was, however, conscious of the advantages of excision, since the histological experience afforded unequivocally evidence of the sharp limitation of the growth and non-infection of the lymph-glands.

Dr. BUCKLAND JONES showed a *Case of Paralysis of the Larynx and Soft Palate*.

The condition came on suddenly six months ago with a difficulty in swallowing and regurgitation of food through the nose; these symptoms disappeared in about six weeks. She had also a difficulty

in speaking, which to a certain extent persisted. There was no history of diphtheria or of syphilis, but the patient has been under anti-syphilitic treatment for the last two months and was distinctly better.

Mr. H. BARWELL considered that there was abductor paralysis of the left cord; there was no scarring or thickening to point to fixation. He believed there was some paresis of the left half of the palate.

Dr. KELSON had seen recently a case of paralysis of soft palate and left vocal cord in a young man which had lasted five years, but in this case the paralysis was of much less duration (six months), and was disappearing, and he thought it might be due to neuritis following influenza.

Dr. PETER H. ABERCROMBIE showed a *Case of New Growth (? Sarcoma) in the Region of the Right Tonsil and Anterior Faucial Pillar in a Man.*

Dr. PETER H. ABERCROMBIE showed a *Case of New Growth (? Adenoma) in the Naso-Pharynx of a Man aged twenty-six.*

Dr. PETER H. ABERCROMBIE gave further notes on the *Case of a Patient aged seventy-five with Sarcoma of the Frontal Sinuses* (shown at two previous meetings of the Association).

The growth occurred, unfortunately, for the second time, and a third operation was performed by Dr. Abercrombie on October 18, 1905. On this occasion there was also present, in addition to the local re-growth, a hemispherical swelling, about an inch in diameter, situated over the left frontal eminence, which had existed for "about three months." The skin over it appeared healthy and was not adherent to the growth underneath, but the tumour itself was attached to the frontal bone beneath it. It felt like the original frontal sinus growth, and was considered to be of the same nature. It was removed, together with the frontal sinus re-growth, and Dr. Wyatt Wingrave reported that both were of the same structure as the original growth, viz. small round-celled (sarcomatous) tissue. The frontal eminence growth was attached to the periosteum and frontal bone, and the affected bony area was very thoroughly scraped.

The patient, in spite of her age (seventy-five), bore the operation remarkably well, as she did the two previous ones, and for the next seven days her progress was excellent. She felt so well, indeed,

that on the seventh day after the operation she insisted on returning home, and left the hospital against advice. A few days later "erysipelas" appeared round the operation wound, and she gradually sank and died from its effects.

In this connection, and had the patient been able to recover from the acute attack, it would have been of great interest, as Dr. Dundas Grant had remarked, to watch whether recurrence once more took place or not, as it might reasonably be expected that the erysipelas would have had a beneficial action on the malignant growth.

Dr. DAN MACKENZIE showed *an Auricle removed for Epithelioma of Posterior Surface, with Microscopic Sections* (prepared by Dr. Wyatt Wingrave).

The specimen had been obtained from a man aged seventy-five. He had been aware of the presence of a sore on the back of his ear for six months before seeking advice. On examination an ulcer was found about an inch long, occupying a position about the middle-third of the posterior surface of the pinna, and lying close to the sulcus between the auricle and the mastoid region. The upper edge was punched out, and the surrounding skin and subcutaneous tissues were infiltrated, the infiltration extending slightly into the neighbouring portion of the mastoid region. The lower edges presented no infiltration whatever, and in the centre of this part of the ulcer was a little islet of epithelium, which, under the cleansing treatment adopted during the first few days he was under observation, manifested such signs of growth as to throw doubt on the preliminary diagnosis of epithelioma. There was no involvement of glands.

A piece, involving a portion of the ulcer and the adjacent skin, was cut out from the upper infiltrated edge, and examined by Dr. Wyatt Wingrave. His report that the ulcer was epitheliomatous led to the removal of the auricle. This was done by means of an incision carried wide of the growth in the general line of incisions for operations on the mastoid process. The auricle was dissected free from its attachments and removed entire, the posterior wall of the auditory meatus and the tragus being left. The resulting raw surface was reduced as much as possible by sutures. It would have been better, as Mr. Nourse has since suggested, if the lobule, which was quite healthy, had been split and turned up as a covering for this raw surface. The post-auricular lymph-node was also removed through a separate incision.

Mr. STUART-LOW said that two considerations influenced one in operating on the auricle. First, the preservation of the tragus,

and, if possible, a part of the concha. Hearing had been said to be as perfect after this operation as before if the tragus was retained, even when all the pinna was removed. Secondly, æsthetic appearances. Since the disease in this case was confined to a small linear area of one inch and a quarter on the middle of the posterior surface of the pinna, and had not attacked the cartilages, Mr. Stuart-Low would have preferred to excise the cutaneous structures very freely for nearly half an inch all round the epithelioma, as in breast operations. As carcinoma seldom attacks cartilage, he would have been satisfied with thoroughly scraping the cartilage, and in this way the disease would probably have been completely eradicated and deformity minimised. The major operation of the removal of the whole pinna could then be undertaken, if necessary, should recurrence supervene.

Dr. WYATT WINGRAVE remarked that whatever doubt there might be clinically as to the nature of the growth, histologically there was none. It differed entirely from rodent ulcer, belonging to a most pronounced type of squamous epithelioma, the epithelium being arranged almost entirely as concentrically laminated cylinders or "pearls" attended by lymphocytosis; chromatin clumps and granules were well marked, as well as hetero-mitosis; the tissue was remarkable for the large number of epithelial cylinders, which appeared as pearls or nests, a feature which was quite sufficient to differentiate it from rodent ulcer. In addition to this exaggerated grouping of the cells, he wished to specially emphasise the presence of chromatin masses outside the cells.

Dr. MACKENZIE, after alluding to the beneficial effects obtained from the use of mucin as a lotion for the epitheliomatous ulcer, said, in reply to Mr. Stuart-Low, that the main object of all operations for cancer was the total eradication of the disease, and in a case like this one removal of the whole auricle was much less likely to be followed by recurrence than if one were content with a simple dissection of the ulcer. Objections on the ground of æsthetics were practically non-existent in a man of seventy-five. He would surely prefer safety to appearance. To state as a rule for our guidance that we should in these cases wait until the disease had penetrated the cartilage and had infected the anterior skin surface, or until the anterior lymph-nodes were infected, before proceeding to remove the entire auricle was utterly opposed to recent teaching on the surgery of cancer. The healing of the wound was complete in six weeks.

(To be continued.)

NOTES.

LARYNGOLOGICAL SOCIETY OF LONDON.—At the Fourteenth Annual General Meeting, held on January 12, the following Officers and Members of Council were elected for 1906—President: Charles J. Symonds, F.R.C.S.; Vice-Presidents: F. Willcocks, M.D., J. B. Ball, M.D., William Hill, M.D., P. Watson Williams, M.D.; Hon. Treasurer: H. B. Robinson, F.R.C.S.; Hon. Librarian: StClair Thomson, M.D.; Hon. Secretaries: H. J. Davis, M.B., W. Jobson Horne, M.D.; Council: Felix Semon, K.C.V.O., M.D., Philip de Santi, F.R.C.S., J. Middlemass Hunt, M.B., S. Paget, F.R.C.S., Atwood Thorne, M.D.

The annual dinner was held the same evening at the Café Royal, Regent Street. The chair was occupied by the President, Mr. Charters Symonds. After the toast of "The King," Sir Felix Semon proposed "Prosperity to the Laryngological Society." The toast of "The Sister Societies" was proposed by Mr. Cresswell Baber and responded to by Sir Lauder Brunton. "The Guests" was proposed by the Chairman and responded to by Mr. John Tweedy, President of the Royal College of Surgeons.

THE SEVENTY-FOURTH ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION will be held this year at Toronto, Canada, August 21 to 25. The Section of Laryngology and Otology will be presided over by Dr. Dundas Grant. The vice-presidents of the section are: George R. McDonagh, M.D., Toronto; H. S. Birkett, M.D., Montreal; John Macintyre, M.B., Glasgow; Hugh Edward Jones, M.R.C.S., Liverpool; and the honorary secretaries: David J. Gibb Wishart, M.D., 47, Grosvenor Street, Toronto; Geoffrey Boyd, M.D., 167, Bloor Street, Toronto; Adam Brown Kelly, M.D., 26, Blythswood Square, Glasgow.

Those desirous of taking part in the work of the section are requested to communicate with the latter as soon as possible.

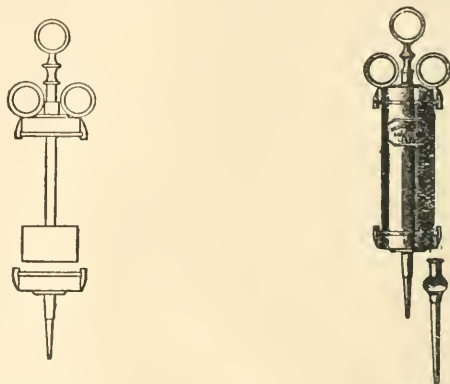
INTERNATIONAL LARYNGO-RHINOLOGICAL CONGRESS.—In 1908 fifty years will have passed since clinical laryngology and rhinology was established in Vienna by Türk and Czermak. The Vienna Laryngological Society has resolved to celebrate this jubilee by organising an International Laryngological-Rhinological Congress to be held in Vienna during Easter week in 1908—i.e., from Tuesday, April 21, to April 25. The President is Professor

O. Chiari, 1, Bellariastrasse 12; and the Secretary is Professor M. Grossmann, ix, Garnisongasse 10.

SURGICAL INSTRUMENTS & THERAPEUTIC PREPARATIONS.

AN ASEPTIC SYRINGE. (By Wyatt Wingrave, M.D.)

The defect of most piston and other syringes which are filled through the nozzle is the great difficulty of keeping them "surgically" clean. This instrument, however, since its parts are made entirely of metal and readily separated, can be easily sterilised. Further, its makers have, at



my suggestion, added a nozzle which, being detachable, not only enables the syringe to be filled without risk of contaminating its interior through an infected aperture, but also facilitates the cleaning of the nozzle itself, a precaution of the utmost importance in aural treatment.

This syringe is made by the Medical Supply Association, of 228, Gray's Inn Road, London, with nozzles of various sizes.

"LICHENIDS." (By Wyatt Wingrave, M.D.)

Iceland moss at one time enjoyed considerable reputation among "throat remedies" in the form of either decoction, jelly, or lozenges, and was to be found in the "British Pharmacopœia" as late as 1885, but it has gradually become neglected and is now rarely heard of. Recollection of its associations awakened a desire to test the clinical evidence of its traditional value, and through the co-operation of Mr. W. H. Martindale I am able to substantiate those traditions, and have no hesitation in suggesting its restoration to a place in our throat pharmacopœias.

Percentage Composition of Cetraria Islandica :

Cetrarin	.	.	.	3
Lichenin	.	.	.	45
Amylaceous fibrin	.	.	.	36
Gum	.	.	.	4
Non-crystallisable sugar	.	.	.	4
Water and salts (inorganic)	.	.	.	8

It will be seen that the chief component is *lichenin* ($C_{12}H_{20}O_{10}$), a starch-like body which consists of two elements soluble in hot water, one of which is also soluble in cold water. There is a small quantity of soluble gum and 36 per cent. of a substance partially extracted by boiling water called *amylaceous fibrin*. *Cetrarin* is a bitter principle, readily extracted by hot water, and gives the characteristic taste to the decoction, and was probably valued as a bitter tonic.

Thus Iceland moss affords the necessary material for lubricating and soothing the mucous membrane with which it comes in contact. This quality is amply realised in the discs called "lichenoids," perfected by Mr. Martindale, who has excluded the cetrarin. They are of a size and consistence suitable for *slow* and *passive* solution in the mouth, a process by which the demulcent and lubricating properties are better obtained than by the ordinary soft jujube, which encourages rapid mastication and *active* deglutition. They will be found satisfactory in inflammatory and excitable states of fauces and oropharynx, especially to speakers who suffer with dry mouth and throat. As a sialogogue Iceland moss is an excellent corrective in pyrosis.

Abstracts.

FAUCES AND PHARYNX.

McCollow, J. H. (Boston).—*The Experience of Nine Years in the Treatment of Diphtheria with Antitoxin.* "Boston Med. and Surg. Journ.," June 1, 1905.

A long article with numerous statistics, the conclusions being: *First*, that antitoxin is a remedial agent of immense value in the treatment of diphtheria, and should be classed among the great medical discoveries of the nineteenth century. *Second*, that in order to obtain the best results it is important that the serum should be given at the earliest possible moment in the course of the disease. *Third*, that in attacks of diphtheria of a severe type antitoxin should be given in very large doses. *Fourth*, that in laryngeal diphtheria, in the majority of instances, intubation is the operation of election.

Macleod Yearsley.

Langmaid, S. W. (Boston).—*The Effects of Tobacco upon the Throat.* "Boston Med. and Surg. Journ.," June 15, 1905.

The author's experience of the evil effects of tobacco-smoking on the throat has been contrary to the general teaching of the text-books. He acknowledges that his observations, made in a cold, moist climate, may not hold good in warmer or warm-moist ones. He believes that in all cases of acute and chronic naso-pharyngitis smoking must be abandoned, or the cure is delayed.

He believes that tobacco acts less by the irritation to the pharyngeal mucosa by the smoke than by its poisonous effects upon the nervous system, whereby vaso-motor disturbances are set up.

The author quotes de Schweinitz and Edsall, Wyatt Wingrave, Petty and others as offering sufficient evidence of the poisonous action of excessive smoking upon the nervous system. The smoker is never quite free from a form of naso-pharyngitis and, sooner or later, a mild chronic tracheitis appears. Langmaid thinks the morning cough due thereto characteristic, as he has frequently found it disappear upon the suspension of tobacco-smoking. He specially draws attention to the effect of tobacco upon the singing voice.

Macleod Yearsley.

LARYNX.

Gavello, G.—*The Paralysis of the Vocal Cords in Mitral Affections.* "Bolletino delle Malattie dell Orecchio," etc., Florence, November, 1905.

The author mentions the common causes of pressure in the laryngeal nerves from cardio-vascular disturbances. A new possible factor was indicated in 1897 by Ortner, who affirmed an etiological relation between paralysis of the left recurrent and mitral stenosis. He described two cases in which with mitral stenosis and marked dilatation of the left auricle there was complete paralysis of the left recurrent. The author mentions one case reported by each of the following authors—Kraus (Graz), 1900; Hoffbauer, 1902; Syllaba (Prague), 1903; Alexander, 1904; Sheldon, 1904. In all these the left recurrent paralysis resulted from stenosis of the mitral valve. He also gives details of a case of his own occurring in a woman aged nineteen. The author does not consider sufficient the view of Ortner, that the paralysis is due to direct pressure on the nerve by the dilated auricle, but inclines to the theory of Kraus and Hoffbauer, that it is due to a general descent of the heart and a dragging down of the aortic arch causing pressure on the recurrent and consequent degeneration.

James Donelan.

Gavello, G. (Turin).—*On the Laryngeal Disturbances in Syringomyelia.* "Archiv. Ital. di Otologia," etc., Turin, November, 1905.

A very careful and detailed account of the general and laryngeal features in the case of a woman aged thirty-one occurring in the clinic of Prof. Gradenigo. The right vocal cord was fixed in the cadaveric position, and the left in the median line in respiration, passing beyond it on phonation. The cases of several authors are referred to. There was no paralysis of the trapezius or of the sternomastoid, and these reacted normally to the galvanic current on both sides. The author points out that while from the researches of Grabower, Exner, and others, one is inclined to admit the absolute independence of the laryngeal motor innervation of the eleventh pair of nerves against the old theory of Claude Bernard, the latter tends to come into vogue again, being supported by the recent observations of van Gehuchten, who, by the study of the degenerations, has demonstrated the existence in the inferior laryngeal nerve of a number of fibres coming from the spinal accessory.

James Donelan.

Ferreri, G. (Rome).—*A Contribution to the Treatment of Laryngeal Tumours.* "Archiv. Ital. di Otologia," etc., Turin, November 5, 1905.

The author contributes a long and profusely illustrated paper on the removal of laryngeal growths by endolaryngeal means. The paper is too detailed to be treated adequately in an abstract.

James Donelan.

ŒSOPHAGUS.

Stewart, John (Halifax).—*Obstruction of the Œsophagus.* "Maritime Medical News," vol. xvii, September, 1905.

The writer defines obstruction of the œsophagus as any interference with its function, no matter what the degree or cause. Then follows a lucid anatomical and physiological description of the gullet, with its relations. The results of several biological experiments are also given. For instance, if the œsophagus be divided transversely, peristalsis of the lower end will result from stimulation of the mucous membrane of the pharynx, while stimulation of the lower segment of the tube will not be

followed by any movement. Again, section of both vagi is followed by spasm of the œsophagus, whereas paralysis might be expected. He explains this by the statement that "the vagus contains inhibitory fibres which restrain the constricting action of the sympathetic ganglia in the œsophageal wall."

The classical varieties—obstruction within the lumen, obstruction from external pressure, and obstruction due to changes in the wall—are described.

In speaking of the difficulties in diagnosis, he refers to instances in which bougies have been passed down the œsophagus to the stomach without discovering foreign bodies, such as coins, which at the time were lodged within the passage. In these instances the use of the X rays should clear away the difficulty. In other cases the passing of bougies may be easy at certain times and impossible at others. An illustrative case is given. At the *post mortem* a loose piece of malignant tissue at the lower end of the œsophagus was found to have acted as a valve, at one time closing the lumen of the tube, while at another it passed within the stomach, leaving an open gateway.

As an instance of the benefit to be obtained from gastrostomy in selected cases, one of cicatricial stenosis of the lower end of the œsophagus is described. It occurred in a boy aged twelve after swallowing concentrated lye. Gradual but painless contraction took place, until finally the smallest bougie could not be entered. At the time of operation the patient's temperature was subnormal, his pulse small and rapid, and his extremities cold. Witzel's operation was done. A large urethral catheter with funnel attached was stitched into the stomach and food was introduced. Eight years later the patient, well and rugged, still fed himself through the tube. After masticating his food with relish, he dropped it through the artificial gullet into the stomach regularly at each meal.

In all cases prognosis should be guarded. An instance is related in which death occurred from malignant stricture at the age of eighty-four, forty years after obstruction of the œsophagus first made its appearance, another in which simple cicatricial stricture produced death at seventy-four, in a man who all his life had suffered more or less from obstruction.

Finally, the writer lays down the law that once sure of the malignant nature of the obstruction, no attempt should be made to dilate the stricture. (*Even in these cases the careful and judicious use of the bougie will often give comfort to the patient and prolong his life.*—ABTRACTOR.)

Price-Brown.

E.A.R.

D'Aiutolo G. (Bologna).—*A very Simple and Efficacious Aural Masseur.* "Bolletino delle Malattie dell' Orecchio," etc., Florence, November, 1905.

The author forms a piston by wrapping cotton-wool round a probe, and having dipped it in an oily antiseptic solution, introduces it in the meatus, where it is worked to and fro. He claims to have found it useful in cases of abnormal adhesions of the membrane and ossicles, and for the application of various solutions in chronic suppurative median otitis, in the withdrawal of plugs of cerumen, and other affections.

James Donelan.

Limonta, G., and Gavazzeni, S. (Bergamo).—*The Treatment of Ménière's Disease.* "Archiv. Ital. di Otologia," etc., Turin, November, 1905.

The authors discuss the causes, symptoms, and treatment of this

affection and describe a case. They found the best results from the use of the galvanic current, negative pole (12 square cm. of surface) on the back of neck, and the positive (3 square cm. surface) just in front of the tragus. The current was gradually increased from 10 to 15 milliamperes, stopping at the first sign of vertigo. The treatment was continued for five weeks, twenty-four sittings in all, with progressive improvement and practical cure, except as regards subjective noises. *James Donelan.*

THERAPEUTICS.

Gwathmey, James T.—*The Vapour Method of Anæsthesia.* Medical Society of the County of New York, September 25, 1905.

He reviewed the evolution in the administration of anæsthetics from the time when chloroform was given "powerfully and speedily," and when an unmeasured quantity of ether was poured into the open cone, up to the present, when each drop of these powerful drugs is both measured and timed. Snow, Clover, Paul Bert, Junker, followed in succession and assisted in eliminating the unknown, and placing anæsthetics on a firm and solid basis. The Harcourt chloroform inhaler in England, the Braun chloroform-ether inhaler in Germany, and the Gigliementi oxygen-chloroform inhaler in France, represent the very latest contributions towards the accurate administration of anæsthetics. The objection to the English and French inhalers is, that they are for chloroform alone and have closed masks with valves. The Braun inhaler is the best, but the mask is undesirable. Dr. Gwathmey then exhibited his own inhaler, the unique features of which are—that chloroform or ether can be given singly or combined in any desired proportion; the ability to increase or decrease the air or oxygen without at the same time increasing or decreasing the anæsthetic; the mask, an anatomically correct fitting face-piece, the rim of which is hollow and perforated around the inner margin to allow the vapour to escape, otherwise identical with a folding Esmarch mask. This is covered with four layers of gauze, over which is placed a piece of oiled silk or rubber tissue. A small opening is cut in the middle of this gauze, so that during the induction period a few drops of chloroform may be added, as with vigorous alcoholics. Dr. Gwathmey's inhaler gives a maximum 2 per cent. chloroform vapour, with a minimum of $\frac{1}{10}$ per cent.

The inhaler, which is made by the Kny-Scheerer Company, consists of three ounce bottles in each of which are four tubes, varying in length from one that reaches the bottom of the bottle to one that penetrates only the stopper. These tubes represent four degrees of vapour strength; the longest, with the mask just described, has an estimated 1 per cent. vapour strength; the shortest, representing a very attenuated vapour, $\frac{1}{10}$ per cent. As the mask is not air-tight, the vapour cannot be compressed, thus avoiding the danger of an overdose. The advantages claimed for this form of anæsthesia are: (1) A pleasant induction stage; (2) stage of excitement absent; (3) pulse and respiration normal, no mucous rale or billowy breathing; (4) complete relaxation; (5) absence of unpleasant after-effects on account of the attenuated vapour used; (6) the continued use of an attenuated oxygen or air and chloroform vapour of known percentage, to which an attenuated ether vapour can be added or substituted when conditions require a change; (7) a possible change in the vapour percentage, with the same flow of oxygen or air, by a change of tubes or by varying the pressure in the same tube, or by a combination of the two methods.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

Original Articles are accepted by the Editors of this Journal on the condition that they have not previously been published elsewhere.

Twenty-five reprints are allowed each author. If more are required it is requested that this be stated when the article is first forwarded to this Journal. Such extra reprints will be charged to the author.

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A CASE OF THROMBO-PHLEBITIS OF JUGULAR BULB AND CEREBELLAR ABSCESS. LIGATURE OF VEIN; LATER EVACUATION OF SINUS AND BULB; DRAINAGE OF CEREBELLAR ABSCESS. RECOVERY.¹

BY DUNDAS GRANT, M.D., F.R.C.S.,
Surgeon to the Central London Throat and Ear Hospital.

D. B——, aged twenty-eight, printer, was referred to Dr. Grant on October 30, 1905, on account of dulness of hearing and discharge. Previously he had been giddy, with retching, but not real vomiting. On the day before he had an attack of cold and shivering, with actual vomiting. He had been the subject of chronic purulent discharge from the right ear of several years' duration. His left foot was weaker than the right, and the knee-jerk was increased. His pupils were normal, but he had slight nystagmus on looking to the left. The discharge was found to come from the attic, and there was no perforation sound on inflation. There was no doubt as to the necessity for at once performing the radical mastoid operation, and it seemed very probable that there was some more serious condition behind the disease in the middle ear.

On the following day the radical mastoid operation was performed at the Central London Throat and Ear Hospital in the

¹ Communicated to the Otological Society of the United Kingdom February 5, 1906.

usual way; the antrum was found full of granulation tissue, the disease extending into the mastoid cells which were opened up.

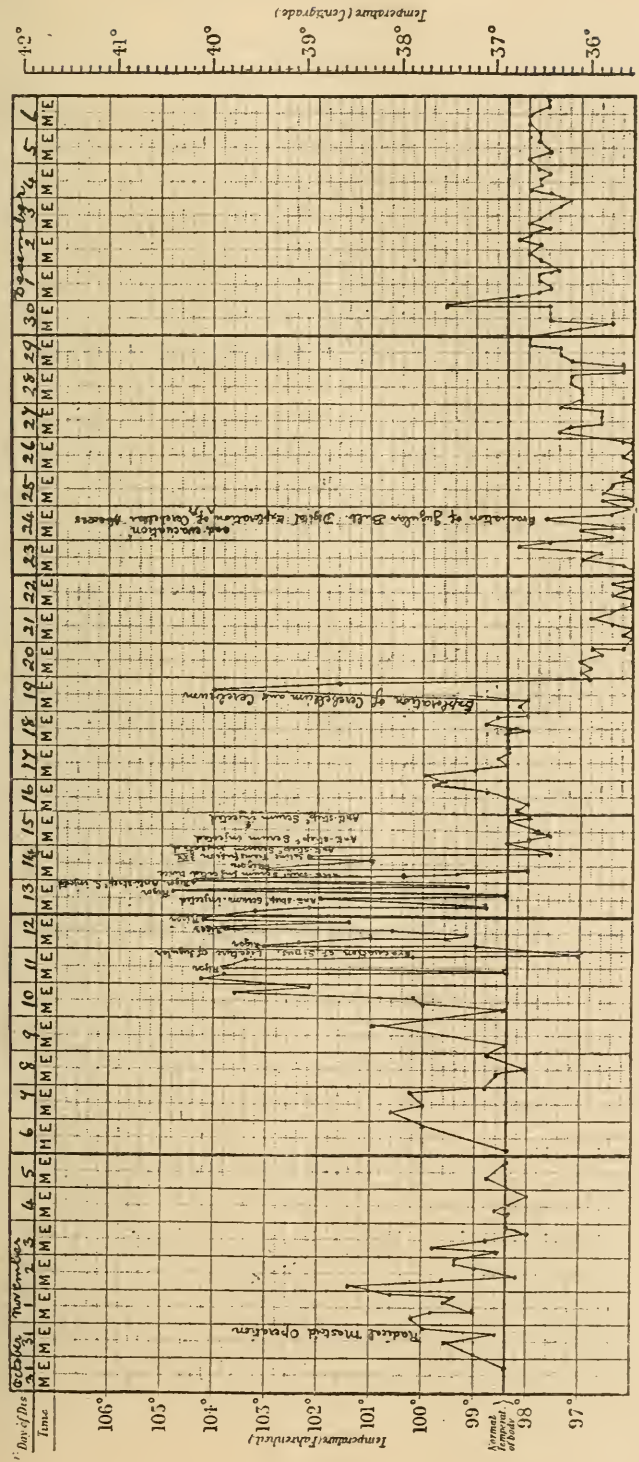
The sickness continued for two days, and when the vomiting passed off ineffectual retching still remained. The patient complained of great pain over his head, and nystagmus was well marked when the eye was turned upwards, outwards, and to the left. The dressing was changed as required until:

November 10, when incontinence was noted and the temperature rose to 103·6° F. The blood count showed 4,800,000 red cells per c.cm., 19,500 leucocytes, 60 per cent. being multinuclear and 40 lymphocytes; there were no bacteria.

November 11.—In the morning the patient had a rigor lasting sixteen minutes. The temperature was 103·8° F., and in the afternoon he felt hot and had been sweating profusely for two hours.

The second operation was performed, the old wound being reopened, and an incision was carried backwards, at right angles to it, along the course of the right lateral sinus. The bone was carefully chiselled away over the course of this vessel, which, when exposed, presented a healthy appearance in its posterior part, but was abnormally white in the antero-inferior portions, the walls being apparently thickened. No fluctuation impulse could be obtained with one finger on the course of the internal jugular vein in the neck and the other on the vertical portion of the sinus. This was taken as evidence that there was thrombosis between these two points. The sinus was now slit open and found to be partially thrombosed; blood flowed freely from it above, and this was stopped by plugging; a smaller stream oozed from below, and this also was temporarily plugged. Dr. Grant then exposed the internal jugular vein in the neck above the entrance of the common facial; it was so collapsed and small as almost to simulate the vagus nerve, and the common facial was distended as if it had already begun to take up the collateral circulation. Ligatures were applied at two places above the entrance of the common facial, the lower being the first tied; from the upper part, before ligature, blood was allowed to flow. A probe was passed up into the bulb of the jugular, and then a syringe was placed in the lumen of the vein to exercise suction, but no pus or clot was withdrawn. The wound in the neck was stitched with silk sutures, a small tube being left in for drainage. Going back to the retro-auricular operation wound, the plug from the lower thrombosed part of the sinus was removed and the freest possible flow allowed

Temperature Chart in Dr. Dundas Grant's Case of Jugular Bulb Pyæmia and Cerebellar Abscess.



Pulse and respirations were practically proportional to the temperature throughout.

to continue for a short time for the purpose of washing out the channel. A plug was then re-inserted.

November 12.—In the morning the patient was subjectively much better, the temperature 99.6° F., and the pulse and respirations were in proportion. The head was clear and the tongue moist. At 9.30 in the evening the patient had a rigor, and Dr. Grant removed the plug from the post-aural cavity and wound in the lower part of the sinus. From the latter venous blood oozed to some extent, and the plug was, therefore, re-inserted; the drainage tube from the wound in the neck was withdrawn; slight facial paresis, involving chiefly the fibres going to the lips, was then noted.

November 13.—An injection of 7 c.cm. of anti-streptococcus serum was given; two hours later the patient was drowsy and the cerebration slow. The dressing was changed, and some sloughing was found to be taking place in the depth of the wound in the neck, which was syringed with biniodide of mercury lotion. The post-aural wound was opened freely, cleansed, and re-dressed. Temperature oscillated between 98.4° and 104.8° . The serum was repeatedly injected as marked on the chart.

November 14.—The patient's temperature remained unaltered and his condition seemed hopeless. At 7.30 at night a subcutaneous transfusion of normal saline solution, to the extent of one pint, was carried out, the place selected being the tissues under the skin of the left thigh (the process lasting twenty minutes). At 10 p.m., two hours after the injection of the saline fluid, the temperature fell and remained nearly normal.

November 15.—The dressings were changed, and there was no rigor.

November 16.—The temperature rose to 99.8° F. in the evening, and when the dressing was changed much fetid pus was observed in the wound behind the ear.

November 17.—Temperature normal, but still a large quantity of fetid pus.

November 18.—The wound was dressed at two p.m., and two and a half hours later it was noted that the patient was becoming extremely drowsy, a slighter degree of this condition having been noted earlier in the day; the patient had also complained of headache; the drowsiness was more conspicuous in the evening, and was deepening into coma; it was only with difficulty that he could be got to give replies to questions; the pupils reacted still to light and were equal. Nystagmus was present as before, and it was

now noted that the right hand was weaker than the left, a phenomenon which had been previously sought for and found wanting (the patient is a right-handed man).

November 19.—The same comatose condition being now more marked, lumbar puncture was performed, and the cerebellum and the temporo-sphenoidal lobe were explored. The lumbar puncture failed owing to the blunting of the point of the needle against the lamina of the vertebra, so that it did not enter the theca. The cerebellum was exposed behind the posterior border of the mastoid and below the inferior curved line of the occipital bone; it bulged distinctly, and an exploratory incision was made by means of a long narrow knife in the direction of the internal ear, also in other directions, and an exploring cannula was inserted, but no pus was found. The dura mater was stitched together, as also the skin and deeper structures. The temporo-sphenoidal lobe was next explored, and the meninges over it were found bulging, but an exploratory incision and the insertion of the cannula evacuated no pus. Hæmorrhage resulting from the division of the middle meningeal was checked by pressure. The dura mater and soft parts were sutured; the wound behind the auricle was again investigated and thoroughly cleansed. The temperature rose for one reading to 104° , and then descended to 96.8° , remaining, as may be seen, much below the normal.

November 20.—In the depth of the wound there was a considerable amount of foetid pus; the parts were cleansed with chlorinated soda, a plug moistened with this being left *in situ*.

November 21.—The fœtor was not so prominent, and the wound in the neck looked more healthy.

November 23.—The patient was still in a semi-comatose condition, dozing most of the day, and answering questions only very slowly, when roused. It was again found that the grip of the right hand was less strong than that of the left, and that sometimes the patient was seen to lift the right hand by means of the left one. There was some boggiess over the cerebellar incision, and on pressure foetid pus flowed out. The cavity was cleansed, and the parts very lightly plugged, boracic fomentations being applied.

November 24.—The state of the patient remained very much the same, but it was noted that on pressure above pus flowed along the course of the right internal jugular vein; this pus (according to the notes) was thick and creamy, differing from that behind the auricle, which was foetid, and that coming from the cerebellar incision, which was thin, brown, and foetid. At six o'clock in the

evening, the condition remaining as above, Dr. Grant inserted a probe into the sinus at the base of the wound in the neck, and found that it led upwards towards the angle between the mastoid process and the angle of the jaw; another probe was put in the course of the lateral sinus, behind the petrous portion of the mastoid, but the two probes did not touch.

In order to explore the bulb of the jugular vein, Dr. Grant carried the post-auricular incision downwards to meet the wound in the neck, and reflected the soft parts off the mastoid process, as also the periosteum, cutting through the posterior belly of the digastric after the superjacent muscular fibres; the mastoid process was chiselled away still further to expose the lateral sinus, and more especially the portion of bone dipping down between the sigmoid sinus and the bulb of the jugular vein, this part of the vessel being freely opened and cleansed. The source of the fœtid pus was, however, not so far discovered. The cerebellum was then once more exposed, but exploration with the knife and pus-seeker afforded as before no signs of an abscess. Dr. Grant then inserted his finger through the trephine opening and found that it entered a cavity of approximately about half an ounce in capacity, with smooth walls. Into this he introduced a narrow piece of indiarubber tubing and two plugs of iodoform gauze, the extremities of these being brought out through the opening in the reflected section of the flap. The anterior part of the cerebellum to the central site of the remains of the sinus was soft and ragged, and it now seemed clear that the bulk of the pus had come from a cerebellar abscess discharging in this position.

November 25.—Plugs were removed from the cerebellum and found to be fœtid; the plugs from the neck and post-auricular incision were quite free from fœtor, the abscess in the cerebellum apparently relieving itself entirely through the posterior tube, which was withdrawn to the extent of about one inch.

November 26.—The wound in the neck was still inactive and covered with brownish pus. There was also some fœtid brownish pus again found in the antro-tympanic cavity, and welling from the cerebellum. The whole wound was carefully irrigated with boracic acid and swabbed with biniodide solution; a second very small tube was inserted into the cerebellum, and through it the abscess cavity was gently syringed with boric lotion, some pus being thus extruded; the second tube was left *in situ*; the wound was lightly packed, and boric fomentations were applied and changed every six hours.

The pus was examined on the 27th; in it diplococci predominated, which retained the Gram stain; there were a few intracellular micrococci and a few chain cocci.

November 27.—When the tube was taken out of the cerebellum the pus, which welled up, was foetid and darker than on the previous day. The tube was re-inserted and the fomentations re-applied. In the afternoon Dr. Grant withdrew from the cerebellar cavity, by means of suction, some pus and disintegrated cerebellar substance. The tube was re-inserted and fomentations re-applied.

November 29.—The brownish pus which exuded when Dr. Buchan dressed the wound was in smaller quantity, and the pulsation was very marked. The tube was reduced in size, and the dressings and fomentations re-applied. The patient on this day said that he felt much better; his intellect was considerably brighter, and his replies to questions were more readily given; he sometimes spoke of his own accord, took more food, his pulse was more regular and of fair quality.

November 30.—The wound looked more healthy; the pus from the cerebellum, though still foetid, was smaller in quantity; the patient was hungry and continued to have a good appetite.

December 2.—His general condition was better, his pulse stronger and of better quality, his mental condition quite clear, the wound looking healthy, and the pus from the cerebellum less foetid.

From this time the improvement was steady, and on December 6 the tube was permanently removed from the cerebellum. The wound began to close rapidly; healthy granulations were present, and it has steadily diminished ever since, the patient improving and being now free from all constitutional disturbance.

January 11, 1906.—A small flat sequestrum from the edge of the cerebellar opening was removed, and drying powder was dusted over the granulating surface.

January 18.—A granulation was removed from the depth of the tympanum and spirit drops were ordered to be inserted.

Among the features which seem interesting in the case are the following:

- (1) The positive evidence of thrombosis in the jugular bulb.
- (2) The negative results of exploration of the cerebellum through the post-mastoid trephine opening. Under similar circumstances an exploration through the anterior part, on the central site of the sigmoid sinus, would probably have been more positive in results.
- (3) The effect of the subcutaneous injection of a large quantity

of normal saline solution, which seemed to have been one of the turning-points in the case, the anti-streptococcus serum which was used, somewhat experimentally, being apparently devoid of result.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

Meeting held February 23, 1906.

DR. G. GELLÉ *in the Chair.*

EXHIBITION OF CASES.

Dr. LUC.—(1) Two cases of radical mastoid operation completely cured at the end of six weeks. Siebenmann's flaps were employed, and the subsequent treatment consisted in deep tamponment and the insufflation of powder of ektogan.

(2) A case of bilateral Caldwell-Luc operation on account of chronic suppuration of the maxillary antra, followed by exploratory opening of the left frontal sinns by the orbital route on account of a suspicion of suppuration in this cavity, which was subsequently negatived. Irrigation of the left maxillary antrum set up subsequently a fronto-orbital phlegmon on the same side.

(3) Diffuse non-specific hyperostosis of the superior maxilla in a woman; this had resulted from multiple dental caries and without suppuration in the antra.

Dr. CASTEX.—(1) Three rhinoliths of ramified form, of which one was removed by the anterior naris and the two others by the naso-pharynx. These occurred in three women, who complained of unilateral nasal obstruction of several years' duration.

(2) A case of palatine leucoplasia in a man, resembling severe secondary specific changes, but in reality non-specific.

Dr. MAHU.—(1) A case of naso-labial angeioma of the size of a nut occurring in a male subject, which was cured in a month by means of four injections of two thirds of a cubic centimetre of oxygenated water (peroxide of hydrogen) of twelve-volume strength, after partial failure of electrolytic treatment.

(2) Deformities corrected by means of cold paraffin prothetic injections by means of the author's syringe; two affected the nose, one of which had been flattened as the result of an abscess of the septum of the "shirt-button" order, the other from traumatism resulting in a fracture of the nasal bones proper; the third was one of a post-aural fistula remaining after a radical mastoid operation, and which was overcome in three sittings.

Dr. GUISEZ.—(1) A half-franc piece extracted from the right bronchus by means of superior bronchoscopy; this was accomplished three days previously in Rose's position with simple cocaineisation. The author is of the opinion that preliminary tracheotomy is not necessary in most cases, at all events under the following conditions: (1) that sufficiently good light is provided; (2) that the tube is introduced at the angle of the mouth opposite to the involved bronchus; and (3) that the tube is straightened up very thoroughly so as to reach and traverse the glottis.

Dr. BOURGEOIS.—(1) Case of myxomatous degeneration of the glottic mucous membrane in a woman; this affected particularly the vocal cords. The lumen of the glottis was diminished, but the mobility of the arytenoids was quite perfect. A considerable portion of the tumour was removed by means of forceps, and found to be cystic in nature, while a histological examination revealed it as a cystic œdematous fibroma, of which the outer wall was covered with the normal pavement epithelium of the larynx on a giant mucous tissue with large branch cells—in short, the same structure as the so-called myxomata of the nasal fossæ.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundred and Fourth Ordinary Meeting, March 2, 1906.

P. WATSON WILLIAMS, M.D., *Vice-President, in the Chair.*

The following communications were made:

CASE OF TUBERCULOUS LARYNGITIS REMOVAL OF EPIGLOTTIS; CURE.

Shown by Mr. HAROLD BARWELL. A. G—, a girl aged twenty-one, first seen by me in July, 1905, had had extensive disease of

the left upper lobe six years before, and later the right lung became involved. On admission there was impaired resonance at the right apex, back and front, with crepitations and increased vocal resonance; on the left side there were moist sounds behind and in front down to the mid-scapular level, high-pitched dulness, increased vocal resonance, and, near the left side of the spine, whispered pectoriloquy. There was then no expectoration, but tubercle bacilli had been found in January, 1904, and again when, after the larynx had healed, she went to the sanatorium at Northwood. She had been hoarse for five weeks and had suffered for three weeks from dysphagia, which had become so severe that she had been unable to swallow solids for some days. The epiglottis was much infiltrated and ulcerated on its laryngeal surface; the remainder of the larynx was unaffected. The epiglottis was removed with punch-forceps in two pieces; the dysphagia was at once relieved, and the wound healed rapidly. The larynx remains well over six months after the operation, and the general health has much improved.

CASE OF TUBERCULOUS LARYNGITIS; ACTIVE LOCAL TREATMENT; CURE.

Shown by Mr. HAROLD BARWELL. The patient, a woman aged thirty, was admitted to Mount Vernon Hospital, Hampstead, in May, 1905; she had suffered from weakness of voice and cough for fifteen months, and there were occasional streaks of blood in the sputum, in which tubercle bacilli were also found. Diminished resonance and moist crepitations over the left upper lobe in front and behind. The right arytenoid was congested and swollen, the right cord was reddened, and there was interarytenoid swelling; the left arytenoid was also slightly swollen. Daily frictions were employed, with a mixture of lactic acid, formalin, and carbolic acid, and a week later a piece of the right arytenoid was clipped away with Lake's forceps. The frictions were continued and the larynx became completely healed. The patient stayed at the Northwood Sanatorium from July 7 to August 9. She is now in service; the scar of the operation is just visible, but otherwise the larynx appears normal.

Mr. E. B. WAGGETT congratulated Mr. Barwell heartily on his excellent result, particularly in respect to the epiglottis case, which seemed to be absolutely cured. His experience was that tuberculosis of the epiglottis was very apt to resist the good influence of sanatorium treatment, and amputation of it, which had been done a number of times, was, he believed, a very valuable therapeutic proceeding. Some patients refused to submit to the operation under cocaine. A few days ago he had

amputated the epiglottis under chloroform anæsthesia, the patient sitting in a chair. Adrenalin and cocaine were employed in addition. No difficulty whatever was experienced in keeping blood from passing the glottis and there were no disturbing symptoms either at or after the operation. As was the usual experience, there was no difficulty in swallowing a semi-solid meal a few hours later.

Dr. H. J. DAVIS asked whether there was any passage of food down the larynx after the operation.

Dr. F. H. WESTMACOTT agreed that the result was very good, and the cases were almost exactly similar to one he had in the previous week, and in which there had been no comfort in swallowing for three months. He did the operation under cocaine, and afterwards painted the part with a solution of iodoform benzoine, and ether. That seemed to take away the soreness, and was based upon the example of Whitehead in excision of the tongue. The operation was done at 11 a.m., and by 3 p.m. the patient swallowed a cup of tea straight off, which he had not been able to do for months. There had been no cough, and no liquid had got into his larynx since the operation. It was now perfectly healed, and the patient was rapidly gaining flesh. Curiously, he could not take milk, as it seemed to clog around the glottis and some went into the larynx, causing coughing for some time afterwards. Koumis was given, and now he could take a glass of milk with comfort.

Dr. WATSON WILLIAMS congratulated Mr. Barwell on his excellent results. He was beginning to feel, however, that greater results could be obtained from rest and sanatorium methods in laryngeal tuberculosis than was formerly suspected, and recently he had had several cases which cleared up in a way he would not at one time have thought possible without operative treatment. He thought care should be taken to differentiate those which could be cleared up without pain and fairly rapidly under sanatoria methods, from those requiring operation. At present the profession was in a tentative position on the matter. He was not surprised that the loss of the epiglottis had not influenced the patient's comfort in deglutition. He would be a little timid in operating on such a case under chloroform, but apparently it could be done if one had at hand means of treatment should blood get into the larynx. In reply to Mr. Waggett, he said the sanatorium-treated cases were not essentially epiglottis cases, but the epiglottis was involved.

Dr. JOBSON HORNE asked Mr. Barwell for further information about the nature of the lesion of the epiglottis. It was so unusual in Dr. Horne's experience of tuberculosis to find the epiglottis typically turban-shaped and no other part of the larynx affected by the disease, that he desired to see a microscopic section cut through the portion of the epiglottis that had been removed. If such a section revealed histological evidence of tubercle, then the case from the standpoint of morbid anatomy was exceptional. From the standpoint of the so-called surgical treatment of laryngeal tuberculosis, it was commonly accepted that the removal of the epiglottis at times afforded relief, and as a palliative measure had been successful. Several similar cases had been recorded in which the physical difficulty produced by disease had been overcome by mechanical means, and not only in tuberculosis; Dr. Furniss Potter¹ had removed the epiglottis as a palliative measure in a case of inoperable malignant disease of the larynx, and with considerable benefit to the patient. One must not, however, regard these palliative measures as remedial, and Dr. Horne

¹ *Vide* JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xvii, p. 681.

agreed with the President that more importance should be attributed to the sanatorium methods as effecting a cure of laryngeal tuberculosis.

Mr. BARWELL, in reply, said the specimen was exhibited in the room with the patient, and Dr. Horne could have a section at any time. The epiglottis was typically turban-shaped, of large size, and ulcerated on the laryngeal surface. Both lungs were affected, and bacilli had been found in the sputum. He believed that of all parts of the larynx the epiglottis was least amenable to treatment by surgery. It was rare to get such a case as the present, where the epiglottis was the only part affected, but in such a case, if removal were done early, the case would do well. The only other case of the kind he knew was Mr. Lake's, in which the epiglottis was the only part markedly affected. It was recorded in the second edition of his book. Indiscriminate operation in tuberculous laryngitis was liable to bring it into disrepute; prior to any operation the temperature and general condition should be watched. Where there was dysphagia surgical treatment was best. He had never used general anaesthesia for the purpose; he had done a dozen cases under cocaine, and it was quickly over, and caused little disturbance to the patient. He had never known food enter the larynx afterwards, except once, and then it occurred three months after, and was associated with fixation of the arytenoids in wide abduction.

CASE OF ULCERATION OF EPIGLOTTIS.

Shown by Mr. HAROLD BARWELL. The patient, a man aged forty, came to my Out-Patient Department in July, 1905; he had suffered from hoarseness and slight cough for two years; there was thick yellow expectoration, with, ten days before, a streak of blood. He had been treated elsewhere since February by laryngeal injections of creosote with some improvement. The voice was peculiarly high-pitched; there was no dysphagia whatever. Fauces and nose normal. Larynx, cords slightly reddened, especially the left; left band swollen, arytenoids and interarytenoid region normal, firm pink swelling of the epiglottis with serpiginous ulceration giving rise to a peculiar nodular, worm-eaten appearance. The physician reported "a few dry crepitations at the left apex, nothing active." The length of the history, the freedom from dysphagia, the worm-eaten aspect of the epiglottis, with the absence of massive infiltration, did not appear to me typical of tuberculosis. I gave potassium iodide and the voice much improved and the epiglottis appeared to be cicatrising, but he ceased to attend after four weeks. He reappeared on February 22, 1905; the voice is good, but there had been slight dysphagia for three weeks; there is further destruction of the epiglottis and slight interarytenoid swelling. I should much value the opinion of the Society on the nature of the lesion.

Dr. H. J. DAVIS thought the condition was lupus.

Dr. WATSON WILLIAMS said his feeling was in favour of chronic tubercle.

Dr. WESTMACOTT asked Mr. Barwell what conclusion he drew from the man's copious rash on the back last September, which rash the patient said sometimes came out now. He had also had, for some weeks, profuse nasal discharge. Since three weeks ago there had been pain and dysphagia. The ulceration seemed to be either tubercular or lupoid. There was thickening of the deep cervical glands on each side of the larynx, which seemed to put lupoid condition out of court. He thought it was tubercular, and asked whether tubercle bacilli were found in the sputum or in the scrapings from the epiglottis.

Mr. BARWELL replied that the sputum had not been examined, as the patient had been in a large out-patient department, and there had been no opportunity, but the physician reported a few dry crepitations at the apex of one lung. He first saw the patient in July, before he had the rash, and the larynx was in almost the same condition as now. He denied syphilis. The iodide of potassium which he was given might account for his rash. He lost sight of the patient for a long time. His own opinion now was that it was lupus. In reply to Mr. Fox as to why tuberculin had not been used, there had not been an opportunity to take the man into hospital.

A CASE OF ATROPHIC RHINITIS.

Shown by Dr. H. J. DAVIS. Woman, aged 18; atrophic rhinitis; no crusts; posterior wall of naso-pharynx and posterior border of septum plainly visible through each nostril. The naso-pharynx is seen to be moist and lubricated, the oro-pharynx dry and glazed.

Dr. H. J. DAVIS said he really showed the patient more as a curiosity. She came to the hospital complaining of dyspepsia and dryness of the throat. He did not think that he had ever seen a case in which the naso-pharynx was so plainly visible through the anterior nares, nor one in which the posterior border of the septum and the Eustachian tubes were also visible through the nose. He asked why it was that the naso-pharynx was well lubricated and moist and the other part of the pharynx dry. He thought that in atrophic rhinitis there was dryness of the upper part of the naso-pharynx as well as dryness in the lower; but the back of the oro-pharynx in this case had always remained dry and glazed, and nothing that he had done for the patient had brought relief of this symptom of which she complained. He invited opinions as to the cause of the dryness in the oro-pharynx alone, and suggestions with regard to treatment.

Dr. H. SMURTHWAITE said he had a patient at present with atrophic rhinitis, which was certainly as marked. One could see the Eustachian tubes, and towards the frontal sinus, the middle and inferior turbinates, being much atrophied. He complained of the rush of cold air when eyeing. He had decided to give him a false turbinal by injecting under the atrophied membrane cold paraffin.

Dr. WATSON WILLIAMS thought it was an open question how far the

dryness of the membrane was due to the pathological condition underlying the affection and how far to the simple absence of ordinary moistening of the membrane. He did not think the laryngeal complications were merely due to nasal conditions, but to direct implication of the larynx.

Mr. CHARLES PARKER thought the middle turbinates were much enlarged, and that the dryness was due to the diversion of the air from its usual course through the superior meatus and over the vault of the naso-pharynx. He thought the oro-pharynx would be found dry instead of the naso-pharynx in many cases of marked enlargement of the middle turbinals.

RECENT PHOTOGRAPHS OF SOME CASES OF PARAFFIN INJECTION FOR
NASAL DEFORMITY, AS WELL AS OTHERS TAKEN IMMEDIATELY AFTER
TREATMENT FOUR YEARS AGO.

Shown by Dr. WALKER DOWNIE. The subject of the removal of deformities of the nose by the subcutaneous injection of paraffin was discussed at the last meeting. I learned of this from a member of this Society by letter, but did not know the lines of the discussion until I received my billet yesterday, just as I was leaving Glasgow for London.

All, apparently, are agreed that in many cases a deformed nose can be made more shapely by the judicious and careful introduction of paraffin, and that this can be done with safety.

The point at issue is as to the permanence of that improvement. Some hold that the injected paraffin becomes absorbed, or that it slowly disappears and the deformity recurs, others that it somehow disappears and is replaced by fibrous tissue.

Since receiving the letter referred to I had photographs taken of some of the cases operated upon by me four years ago, and they are shown to-day. If they be examined it will be found—

(1) That the *shape* of the nose is practically identical with the photographs taken within two weeks of the operation, showing that the deformity does not necessarily recur.

(2) In those cases the injected paraffin can be felt as a well-defined firm mass, occupying the same site as it did immediately after injection, and this mass can be readily caught up between the finger and thumb.

I do not believe that the paraffin becomes absorbed—it certainly has not done so in any of my cases, for I have still the majority under observation, and there are two reasons for this belief: (1) The character of this mass when examined with the fingers is the same four years after injection as it was two weeks

after operation; (2) from my experience of the removal of paraffin months and years after injection.

In one case where the injection had been given in Manchester, and where the quantity introduced had been excessive, I removed a quantity of the paraffin three years later. In one operated on in London I removed the paraffin two years after operation, and in another operated on in a London hospital I removed paraffin from the forehead six months after the injection. In each case the paraffin was found to be present, and to be in a fine state of division, in small rounded particles, separated by bands of tissue.

The finding of the paraffin in small particles is not to my mind the early stage of absorption, for this division takes place at the time of injection, if molten paraffin be used, as I showed by the experimental injection of paraffin into a mamma one week before its removal. The conditions found on examination afterwards were reported by me at a meeting of the British Medical Association in 1902. In that communication I reported: "In section the paraffin appears almost entirely in the deeper parts of the subcutaneous fat. It is distributed throughout this layer in blocks of varying size, the largest being perhaps about the size of a pea. These masses, which are either distinctly lobulated, or more irregular, with rounded processes, occupy in every case a position between collections of adipose vesicles which are displaced by them. It is inferred that the paraffin has made its way along the lines of connective-tissue trabeculæ between fat-containing cells." And I further expressed this opinion: "From the fact that the infiltration of the paraffin is definite and tolerably intimate it is difficult to believe that its position would subsequently alter to any extent, although its absorption is possible."

The paraffin breaks up on its introduction; it runs along the cellular planes, and is not eaten into later by the living tissues. And it is held in position by the trabeculæ of the minute planes of cellular tissue in the same way as the fat of adipose tissue is kept in place. I must also say that I have never seen migration or wandering of the paraffin after it has once set. Whilst being injected it, of course, follows the line of least resistance, but after it has set I have never seen it wander beyond the confines of the nose.

In those cases where paraffin has been found in other parts of the face I fear it has reached those regions while the injection was being given and while the paraffin was still in a fluid state.

I can understand, however, the wandering of paraffin intro-

duced in the solid state, as this can never become so intimately incorporated with the tissues as when molten paraffin is introduced.

The paraffin which I still employ has a melting point of 106° – 108° F. I still use the electric current to heat the needle, as described by me in the *British Medical Journal*, November, 1902, by the use of which I am able to keep the paraffin in a fluid state as it enters and passes through the needle, and by which contrivance the temperature can be so easily regulated that there is no risk of scalding the skin, which some operators fear and others report as having occurred, and I never now employ either a local or a general anæsthetic. I have now operated upon close on 140 cases, all with very definite deformity, and in most cases with a very satisfactory result, and until I am convinced, by experience, of its futility or danger Dr. Kirschner's theoretical objections, quoted at last meeting by Sir Felix Semon, will not prevent me from giving to those who desire it the benefit to be derived from this operation.

Dr. WATSON WILLIAMS congratulated Dr. Downie on the results he had obtained over a long course of observations in such cases. He was much struck by the really cosmetic results. Some of the cases had been treated four years previously.

Mr. STEPHEN PAGET added his congratulations. He regretted he was not at the last meeting, and had wondered at the dictum then quoted from a German doctor, who said that the paraffin must either remain like a bullet or must vanish. As a fact, the paraffin did not vanish. There were many cases where one wished it would, where it had to be dissected out because it had gone astray. Much of the vague talk on the subject was due either to the fact that operators did not pick and choose their cases, or that they did not pick and choose their paraffin. A case could not be done justice to unless there were loose, healthy skin. It would be a good thing to collect cases years after injection. A few days ago he saw the first case he did three and a half years ago, and the paraffin had not stirred. He then used it of 125° melting point, but now used it at 115° . Most of the misfortunes which occurred were due to having paraffin with a low melting point or to excess of paraffin. It was unfair that a method so useful for bad cases of deformity should have undeserved blame attached to it. No one should use it simply to minister to a person's vanity.

Mr. CHARLES PARKER asked Dr. Walker Downie if, in his experience, injections of cold paraffin were more likely to shift afterwards than those of melted paraffin, and whether there were any dangers connected with its use for increasing the size of the inferior turbinates in cases of atrophic pleuritis. Cold paraffin used by means of Mahu's injector was such a simple method that if there were no dangers attached to it, and if the results were permanent, he would be tempted to employ it.

Dr. SCANES SPICER said the results as shown in the photographs were the best he had seen; one lady had a most beautiful Roman nose. The great objection to the method was the difficulty of carrying it out without scalding and suppuration, in spite of local antiseptic precautions. He

had had six or seven cases—all among hospital out-patients—but had not followed them up since they ceased attendance. He would try to ascertain the ultimate result in some of them. In one advanced syphilitic case there was plenty of loose skin on the nose, but the nasal cavities were very foul indeed. The sites of injection suppurred freely and repeatedly, and the patient in the end was no better. He always sealed his cases with a wad of cotton-wool dipped in collodion.

Dr. SMURTHWAITE asked whether the cold paraffin was likely to move after the operation. He produced a beautiful nose the other day by this method, but if it was not going to last more than nine months he would rather not have done it.

Mr. P. DE SANTI said the only two cases he had done were complicated by considerable adhesions, due to necrosed and carious nasal bones. He found that by a proper subcutaneous dissection of the parts underneath and loosening the tissues the paraffin could be injected satisfactorily. He did not think the adhesions were an insuperable objection to injection.

In reply to questions, Dr. WALKER DOWNIE said that he showed these photographs to prove that the removal of nasal deformities by this method was practically permanent. He agreed with Mr. Stephen Paget that when the skin was loose and healthy the operation was a comparatively easy one and the result satisfactory. When the skin is bound down by adhesions to the underlying bone, then the injection must be preceded by the subcutaneous division of those adhesions, and as soon as the bleeding has been checked by pressure this should be followed by the injection of the paraffin. Dr. Walker Downie had not employed paraffin in the cold state, and so had no experience on which to base an opinion. But he had the feeling that it cannot, injected in this form, become so intimately incorporated with the tissues as paraffin which is inserted while in a molten state. Its shape would, he thought, be readily altered by trifling blows or firm pressure, injuries which would have no effect on the solidified paraffin which had been injected in the molten state. Scalding of the parts spoken of by Mr. Scanes Spicer might readily be prevented by the use of his device of keeping the needle warm by means of the electric current, which is always fully under control and may be regulated at will, and by avoiding the use of paraffins having a melting-point of over 110° F. He thanked the members of the Society for their kind reception of his communication.

DESCRIPTION OF TWO CASES WHERE ŒSOPHAGOTOMY WAS PERFORMED FOR THE REMOVAL OF A DENTURE IMPACTED IN THE GULLET.

Reported by Dr. WALKER DOWNIE. These two operations were performed during the past nine months, and both patients were men, one aged fifty-two and the other thirty-four. In both cases the tooth-plate passed from the mouth into the gullet while the patient was asleep. In both the body was readily caught by the coin-catcher, but in neither case could it be removed. Kilian's œsophagoscope was used in the first case, but it did not reveal the presence of the foreign body, on account, I think, of swelling of

the gullet wall, for many attempts to remove the body had been made before he came to the Western Infirmary, Glasgow. The œsophagoscope was not used in the second case, as the patient had emphysema of the neck and immediate operation was imperative.

In the first case the denture had, by pressure, caused necrosis of a small area of the gullet wall.

In each case the incision was made on the left side of the neck in line with the anterior border of the sterno-mastoid muscle, and after removal of the foreign body the gullet wall was not stitched and the wound was lightly packed and allowed to granulate. The safety of this method cannot be over-estimated. A rubber tube was passed through the nose into the stomach, by which the patient was fed, and this tube was retained in one case for three and in the other for four days.

In each case the wound healed satisfactorily and completely without any complications, and in the second case the man was back to his work as a *chef* on the twentieth day after operation.

SKETCH OF LARYNX AND MICROSCOPIC SECTION OF UVULA FROM CASE OF HYPERPLASTIC CONGENITAL SYPHILIS.

Shown by Dr. A. BROWN KELLY. This was the case of a boy who suffered from stridulous breathing. Examination showed that laryngeal stenosis was caused by immense enlargement of the arytenoids, which formed two smooth, rounded, symmetrical masses. The soft palate and uvula also presented thickening of a similar character.

There was an undoubted history but no signs of congenital syphilis. Specific treatment reduced the infiltrations only slightly, and the sketch of the larynx shown represents its permanent aspect.

The case is one of a small class first described by Sir Felix Semon, and is of interest because of the uniform and symmetrical character of the infiltration, the absence of ulceration, the resistance to specific treatment, and the tendency to acute laryngeal cedema and suffocation.

CASE OF FIBRO-ANGEIOMA OF NASAL SEPTUM.

Shown by Mr. H. BETHAM ROBINSON. The male patient from whom I removed this growth came under my care in March, 1904. He was a robust man, aged fifty-eight, and stated that about the

previous Christmas he had knocked his nose with a cane. There seems to have been no inconvenience at the time, but a fortnight after he noticed some fulness of the nose. His only complaint afterwards was progressiveness of the left nostril and epistaxis on two occasions. Examination showed a soft granulomatous-looking growth practically filling all the lower part of the cavity in front and touching the outer wall; behind it reached a short distance between the front of the middle turbinate and septum. Its base of attachment to the septum was half an inch long in an horizontal direction in front and involving the tuberculum. It was extremely vascular. I removed it with a snare and touched the base with a cautery point. The growth on section had a very fleshy look, "like a sarcoma," but it seemed possibly in the main to be partially organised blood-clot. Histologically, it consists of a very vascular fibrous tissue, the blood-spaces varying considerably in size and some of them containing clot. The margin is more cellular, like granulation-tissue, and at one or two spots there is organising blood-clot to be seen. There has been no recurrence of the tumour.

Dr. PEGLER said the most conspicuous feature of the specimen was the enormous size of its angeiomatous spaces, which were larger than in any other of the seventeen examples in the possession of the Society. The history pointed in favour of a granulomatous character for this growth, and its histological structure was not greatly opposed to it; indeed, a careful study of granulation-tissue in its various forms showed that that tissue foreshadowed almost every variety of bleeding polypus, and, therefore, inclined the speaker more and more to the belief that they were all varieties of granuloma. Dr. Betham Robinson's specimen did not differ essentially from Dr. Kelson's exhibited to-day. The plasma layer replaced the squamous epithelium almost completely, the granulation-tissue zone was least conspicuous, and the central body of fibrous and fibro-angeiomatous tissue predominated.

A PATIENT SHOWN IN JUNE, 1905, WITH THICKENING OF RIGHT CORD, THOUGHT TO BE MALIGNANT; EXHIBITED AGAIN FOR FURTHER DIAGNOSIS.¹

Shown by Dr. SMURTHWAITE. The patient is a man aged fifty-eight, whom I brought before the Society in June of last year, suffering from a progressive loss of voice and cough of two years' duration. When he first consulted me the following was the laryngeal condition: The right cord was uniformly thickened, and at the junction of its posterior and middle thirds there was a small growth about the size of a pea. In addition the false cord was

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 384.

diffusely infiltrated, or rather had the appearance of a general thickening and irregularity of the membrane. There was no fixation of the joint, but the cords could not be properly approximated on account of the small growth above mentioned. There was general redness in the interior of the larynx.

I removed the growth and submitted the same to a pathologist, who pronounced it to be a squamous epithelioma. Some three weeks later the patient was shown to the members of the Society, and some half-dozen kindly examined him, and later expressed the opinion that the laryngeal trouble was undoubtedly malignant, and advised that a laryngo-fissure be undertaken and the growth be thoroughly removed. This procedure I determined to carry out, but the patient's voice and the general appearance of the larynx improved so much that I put off and have not felt justified in carrying out a more or less radical operation.

The patient is here again to-day, some nine months later, and I should be very glad if those same members would again examine him and say if they still hold to the diagnosis.

MR. DE SANTI said he was one of those who examined the case a year ago, and then the appearance was such that he thought it malignant. There was now no sign whatever of malignancy.

DR. STCLAIRE THOMSON said he was another of those who were mistaken over this case, but he did so in good company, because one of those who were strongest in regarding it as malignant was Sir Felix Semon. He admitted there was no fixation of the vocal cord. But this case raised the question whether possibly vocal cords had sometimes been removed under the impression that they were malignant, when perhaps they were not so. Dr. Smurthwaite had the report of a trustworthy pathologist in the north that the growth was malignant; this was confirmed clinically by members of the Society; and if the case had been operated on it would have been recorded as a case of cure of malignant disease of the larynx. The Morbid Growths Committee of the Society reported that it was not malignant, and the whole condition seemed to be clearing up. It made even members of the Laryngological Society of London a little humble.

MR. WAGGETT said this case could not be quoted as one telling against the value of histological pathology, for the Morbid Growths Committee, on examining the specimen, which had been previously reported upon elsewhere, had no hesitation in saying that they could see nothing in the least suggestive of malignant disease.

DR. PEGLER said that two or three years ago a case was exciting interest, and was reported upon as papilloma, but further investigation led to the belief that it might be regarded as a carcinomatous condition. The pathologist regarded it as papilloma. It showed how careful one should be in reporting. In Dr. Smurthwaite's case the Morbid Growths Committee only reported that it was not any malignant disease of epithelium.

DR. WATSON WILLIAMS expressed the Society's indebtedness to Dr. Smurthwaite for bringing the case forward again.

Dr. SMURTHWAITE, in reply, said that two weeks before bringing the case up he had naturally made a big wound on the right cord in removing the growth, and there was much inflammatory thickening round the base. Thus it showed an ulcer, and knowing of the report of the pathologist that it was squamous epithelioma, members would incline to that diagnosis. Had they seen the larynx before the small growth was removed their opinion might have been different. When the man was first brought to him he gave a guarded diagnosis, saying that the thickening of the false cord and the growth gave a suspicion of malignancy, but a point against that was the small amount of fixation of the cord. The chief symptom was coughing, which had existed two years, but since the removal of the growth had entirely disappeared, and the patient was now perfectly well.

CASE OF SECONDARY SYPHILITIC LESIONS OF THE VOCAL CORDS IN A
GIRL AGED TWENTY.

Shown by Dr. PEGLER. The patient contracted syphilis in a northern town about a week before Christmas, 1905, and had only been under observation for ten days. She had abundance of rash on the body and legs, and mucous patches on the enlarged tonsils and pharyngeal wall. She had consulted Dr. Pegler on account of hoarseness and dysphonia. The vocal cords were red, and showed yellowish patches of ulceration; their borders were eroded, all more marked on the right. There seemed good reason to believe that the condition represented a phase of mucous patches on the cords.

A BOY, AGED SEVENTEEN, WITH ABSENCE OF RIGHT CHOANA.

Shown by Mr. WAGGETT.

Dr. STCLAIR THOMSON thought such cases worthy of some attention, as they showed a certain fallacy in accepting experimental results from the physiological laboratory. The experiment of Ziem relating to the nasal cavities of puppies was, perhaps, the most quoted of any experiment in the literature of laryngology—*i. e.* that sewing up one side of the nose prevented that side of the face from developing. He (Dr. Thomson) could bring forward a young woman, aged nineteen, with a most symmetrical face and an excellent low Norman arch to her palate; but the mother said she had only been able to nurse her, as an infant, at one breast, because on putting her on the other side the only open nostril seemed to block up. This patient always had to wait for the mucus to trickle out of one nostril, and then wipe it away. That case confirmed Mr. Waggett's point, *i. e.*, that there was perfect symmetry between one side and the other, and both those cases from Nature were opposed to Ziem's experiment. He operated upon his case, and she had a half-membranous, half-bony obstruction, quite complete, as he was able to feel in the post-nasal space. He broke it through and nipped a good piece out of the vomer; he had examined the case ten months later, and there was no recurrence.

Dr. H. J. DAVIS said that in the experiment with the puppy mentioned by Dr. StClair Thomson, in which the nostril had been obliterated, the obstruction would in this case be in the anterior part of the nose, but in Mr. Waggett's case the nose was obstructed a long way back, and this might probably account for the different results.

Dr. SCANES SPICER thought the Society should feel indebted to Mr. Waggett for bringing this case forward. It was one of the most interesting the Society had ever had, for it afforded the opportunity of testing the interdependence of arrested functional activity and growth. He had not yet satisfied himself that it was a case of congenital bony occlusion, for he had not been able to see very well, or to interpret the masses which he had dimly seen. He thought he saw a small foramen just below the superior fornix on the right side, as if that choana were not occluded completely by bone. Several points suggested that the face here was not symmetrical. There was alternating internal strabismus, not infrequently seen in cases of nasal obstruction, and which one sometimes found to disappear entirely after clearing the obstruction. He believed also that the eyes would be found to be astigmatic. The patient's palate was very high. Dr. StClair Thomson's case of posterior occlusion was a different matter from getting obstruction in the front of the nose. Zein's experiments were done with the nasal channels blocked anteriorly or throughout, and other factors than the obstruction assisted in the results he got, such as the muscular activity of alæ and the inflammation which had occurred. The case was deserving of full examination and consideration, even to the extent of devoting a whole evening to it, and most members would no doubt look up previous work bearing on the subject.

Dr. WATSON WILLIAMS thought it would be well to ask Mr. Waggett to bring the case again to the next meeting, and he could defer his reply till then.

CASE OF SWELLING PROJECTING FROM LEFT TONSIL (RETENTION CYST)
IN A GIRL AGED TWENTY-THREE.

Shown by Dr. FURNISS POTTER. No symptoms were complained of. A swelling was to be seen protruding from the left tonsil about the size of a horse-bean. The surface was of a pale yellowish grey colour, and examination with a probe gave the impression of fluid. Two similar conditions were observed on the right tonsil, but much smaller in size. The diagnosis was confirmed by incision of one of these latter, which resulted in the extrusion of a small quantity of tenacious secretion and collapse of the swelling.

MICROSCOPIC SECTION FROM A CASE OF NASAL ANGEIOMA (BLEEDING
POLYPUS) REMOVED FROM THE FLOOR OF THE INFERIOR MEATUS
IN A GIRL AGED FIFTEEN, BY Dr. KELSON.

Shown by Dr. PEGLER. The patient was shown by Dr. W. H. Kelson in March, 1903, but there was some error in the report of

the case, which was confused with the preceding one. No section was exhibited. This slide had been kindly handed over to the Society by Dr. Kelson. It displayed very clearly the three zones so commonly seen in discrete nasal angeioma where the stratified epithelium has disappeared—viz. (1) a plasmatic layer; (2) a granulomatous or lymphocytic zone; (3) a trabecular fibro-angeiomatic meshwork constituting the body of the growth in which the endothelioid cells come into prominence and the lymphocytes diminish. Though growing from the floor of the nose, this specimen was almost identical in character with that shown by Dr. Scanes Spicer in December, 1897, removed from the triangular cartilage, showing how little value attached to a grouping of these bodies based upon site of growth apart from pathology.

A WOMAN WITH IMMOBILE RIGHT VOCAL CORD; PREVIOUSLY SHOWN
MAY 5, 1905.¹

Shown by Mr. DE SANTI. The patient was brought before the Society after the lapse of ten months to show that the condition of the larynx was unaltered. When exhibited in May, 1905, considerable diversity of opinion was expressed as to the diagnosis. Dr. Scanes Spicer had suggested aneurysm, but a radiograph showed nothing abnormal. Sir Felix Semón had been doubtful as to the question of paralysis or mechanical fixation, and had suggested possible congenital ankylosis of right crico-arytenoid joint. Dr. Dundas Grant had suggested epithelioma, and Dr. Horne a tubercular origin. Mr. Barwell considered the condition to be one of fixation.

Since May the patient had been under iodide of potassium, and had lost all cough, hoarseness, and pain, and expressed herself as being in much better health generally. The condition of the larynx was, however, exactly the same as when first seen. Mr. de Santi considered the case one of mechanical fixation; whether of congenital, specific, or rheumatic origin it was difficult to say.

Mr. WAGGETT thought it was a case of articular fixation, and not paralysis, and Dr. DAVIS agreed.

Dr. WATSON WILLIAMS said he took the same view as Mr. Waggett from the position of the fixed arytenoid, which was suggestive of some implication of the joint.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 370.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Twenty-fourth Ordinary Meeting, held at the Medical Society's Rooms, 11, Chandos Street, Cavendish Square, London, W., Monday, February 5, 1906.

The President, MR. A. E. CUMBERBATCH, in the Chair.

The following gentlemen were elected as ordinary members :

John Stoddart Barr, M.B., Ch.B.Glasg. (Glasgow).

Henry John Davis, M.A., M.B., B.C.Cantab., M.R.C.P.Lond.
(London).

Alec. Knyvett Gordon, B.A., M.B., B.C.Cantab. (Manchester).

H. Fitzgerald Powell, M.D., F.R.C.S.Edin. (London).

Edward Simmons Stewart, F.R.C.S.Eng. (Harrogate).

PRESIDENT'S ADDRESS.

My first duty is to thank you for the honour you have done me in electing me your President. It is an honour I appreciate so highly that, conscious though I am of my shortcomings, I have, after some hesitation, accepted it. At all times it is a difficult task to fill a presidential chair worthily, and my difficulty will not be lessened by the knowledge of the high standard of efficiency set by my predecessors. I can, however, but do my best, and would ask you to "be to my faults a little blind," and to lend me your best assistance in endeavouring to make our meetings as successful as they have hitherto been.

This year promises to be an important one in the history of the Society, and in any case will be a troublesome one for your Council. I refer, of course, to the "amalgamation scheme." It will require extremely skilful management to negotiate the many rapids ahead and to pilot the undertaking into smooth water. From what I hear matters do not appear to be progressing either rapidly or quite satisfactorily. I feel sure we are all unanimous that if we do consent to be a section of a larger society, we shall only consent on the understanding that the management of our section is left in our own hands, and not in those of a general committee which can know but little of our aspirations and aims. You may rest assured that the Council will consent to no scheme without first laying the

particulars before the members of the Society and obtaining their sanction.

Gentlemen, the exceptional success of our Society so far reminds me that in the history of all successful concerns there is apt to occur a time when there is a tendency to slackness, to take things easily, to drift into mere routine. I am not for a moment saying we have reached that period, but it is well we should remember there is that danger and be on our guard. We must constantly strive in every paper read before the Society, in the notes of every case shown, that there shall be at least some one point which shall suggest food for reflection or give rise to discussion tending to increase our knowledge of disease or to improve our methods of treatment.

I would, therefore, point out to those possessing the time and opportunity what a large field of research is open to them in affections of the labyrinth. In this direction I note with pleasure that Dr. Gray is devoting his attention. We want to know more of the anatomy, physiology, and pathology of this organ, and as regards its pathology not merely the conditions found, but their relations to symptoms. There can be no important advance in treatment till we are able to differentiate the conditions that we vaguely classify under the head of Nerve Deafness, and he is indeed a benefactor who helps in any degree to dissipate the mist that enshrouds the subject.

The following communications were made :

PATIENT, DRAWING, MACRO- AND MICROSCOPIC SPECIMENS OF A CASE OF
EPITHELIOMA OF THE PINNA.

BY MACLEOD YEARSLEY.

W. T——, aged fifty-two, a porter, applied at the Royal Ear Hospital on December 13, 1905. Two months before he noticed a small nodule in the left pinna, which felt like a shot in the skin. This growth enlarged and ulcerated after one month. On examination a hard, raised ulcer, about the size of a sixpence, was found situated in the fossa of the antihelix. Its appearance was fairly well shown in the sketch. There was no glandular enlargement discoverable.

On December 19 the whole pinna was removed with the exception of the lobule, taking small flaps from the anterior and posterior surfaces of the concha. These were united above and behind, and

their lower edges adapted to the cut surface of the lobule. Recovery was uneventful. The patient's urine was acid, sp. gr. 1032, and contained much sugar. Microscopically the growth proved to be an epithelioma.

CASE OF ABNORMAL COLOUR OF MEMBRANA TYMPANI; SHOWN FOR
DIAGNOSIS.

BY MACLEOD YEARSLEY.

F. F—, aged seventeen, a barman, applied on December 22, 1905, on account of slight deafness and buzzing in the left ear, which symptoms had been present for about eight months. A small amount of cerumen, dead epithelium, and hair was syringed out, and the appearance of the left membrane was noted. The right membrana tympani was normal, but the left presented a totally different aspect. It was of a deep greyish blue or slate colour and of good lustre; it appeared fairly normal save in colour. With the Siegle pneumatic speculum the excursion of the malleus appeared slightly less than normal. Catheterisation made no difference to the hearing or to the appearance of the membrane, and the sound heard was that of a normal Eustachian tube. No adventitious sounds, such as a venous hum, could be detected with the diagnostic tube. The results of the testing were as follows: Acoumeter, R. over 12 feet, L. 3 feet. Ordinary conversation, R. over 12 feet, L. 1 foot 6 inches; whisper, L. 2 inches. C. fork, Weber pos. L. Rinné's test; R. pos. for C. and C₂ L. neg. for C. and C₂. Bone-conduction was not diminished or increased in either ear.

The PRESIDENT said the second case was certainly interesting, and it would be instructive to know if any member had met with a similar case. The colour could not be due to venous congestion, because the membrane had not lost its bright polish.

Dr. URBAN PRITCHARD remarked, in connection with the first case, it could not be too well borne in mind that perhaps epithelioma of the auricle was more favourable in prognosis after operation than when it occurred anywhere else in the body. He remembered one exceedingly bad case in which the auricle and cartilaginous meatus were removed. The growth extended into the meatus, and yet there was no return after the operation, though he traced the patient five years afterwards. In regard to the second case, he remembered the pictures of blue membranes which

were shown by Dr. Rohrer, and at which many seemed inclined to laugh. But certainly the present case made one think twice as to whether the exhibitor of those pictures was not right. It was not at all satisfactory to examine such a membrane as the present one by electric light; only daylight could enable the exact colour to be seen. The blueness could not be due to venous blood in the cavity behind, as the hearing was so good.

Mr. ARTHUR CHEATLE asked whether Mr. Yearsley had inquired as to any syphilitic history in the first case. One could easily confuse syphilitic with epitheliomatous conditions in that region. He had known cases which had been microscoped and thought to be epithelioma, but which nevertheless had got well under the administration of iodide of potassium. The case alluded to by Dr. Pritchard subsequently died of acute mania, and he had known of other cases of malignant disease of the ear dying in the same way.

Dr. W. MILLIGAN said, in regard to the first case, a very important clinical fact was that in cases of malignant disease of the auricle there was, as a rule, late enlargement of glands. That fact might substantiate what Dr. Pritchard said about the favourable nature of such cases for operation and the rarity of recurrence of malignant disease in this situation. He (Dr. Milligan) did not regard epithelioma of the auricle as a very rare condition. A fair number of such cases had been seen at his hospital, and a curious point about some of the cases was that epitheliomatous degeneration had followed upon injury. Two years ago he recorded the case of a patient who was injured by a chisel which flew up and cut his auricle nearly across, and a few months afterwards he developed malignant disease in the scar. He would like to hear if Mr. Yearsley had noticed the clinical fact about the late involvement of glands in such cases.

Dr. JOBSON HORNE thought it was necessary for the sake of the "Transactions" to be very clear about cases of supposed malignant disease. Some of the cases which had been brought before the Society as malignant had turned out to be innocent on examination by the Pathological Committee. He suggested, if Mr. Yearsley were agreeable, that the present specimen should be submitted, together with a portion of the tissue itself, so that the Committee might cut its own sections.

Dr. EDWARD LAW asked whether it was not possible that the second case had been subjected to instillations of nitrate of silver, bismuth, or lead, in early life.

Dr. ALBERT GRAY asked whether there was any possibility of

attributing the second case to coal-dust having got into the tympanum. A medical friend of his had seen two cases which he attributed to that cause, the dust having got up the Eustachian tube.

Mr. RICHARD LAKE expressed the opinion that the case might be due to the enlargement of the jugular bulb. One knew of the investigations carried on by Mr. Anderson, of St. Thomas's Hospital, in the early eighties, who found a very fairly large proportion of cases in which the jugular bulb was quite high up in the internal wall of the middle ear. In many of those cases there was not even a thin covering of bone. He (Mr. Lake) had shown a case before the Society in which the membrane was exposed and seen to be pulsating, and the blueness was very evident. Obviously in that case there was a very high jugular bulb, with no bone in front. In reference to the first case, he had been struck, in reading reports of X-ray work, how very amenable to treatment malignant growths on the ear appeared to be. He would be inclined to subject such a case to X-ray treatment.

Mr. SYDNEY SCOTT said he had a specimen with a bulging jugular bulb similar to that referred to by Mr. Lake. In this specimen the wall of the bulb formed part of the floor and inner wall of the middle ear, with a very thin flake of either bone or calcified material adherent to the middle of the tympanic surface of the bulb. He had never seen such a case of blue membrane as the present one; but he had examined the present case and no blueness was discernible in the region of the *membrana flaccida*. The intensely dark blue portion was over the lower part and middle of the membrane, in the exact region in which the jugular bulb would bulge outwards most prominently. He asked whether the jugular vein had been compressed during otoscopic examination, and, if so, had it produced any effect on the appearance of the membrane?

Dr. WATSON WILLIAMS desired to ask those who thought the case was due to the jugular bulb how they explained the blueness of the membrane. Was it suggested that the colour showed through? The patient appeared to have good hearing, and this surely negatived the possibility of an abnormal jugular bulb being in contact with the posterior surface of the ear-drum.

Mr. ARTHUR CHEATLE said he had seen many hundreds of specimens, including many high jugular bulbs, but never one extending higher than the round window, whereas the present appearance went up to Shrapnel's membrane.

Mr. YEARSLEY, in reply, said the question of syphilis was carefully gone into, but he could not get any history or evidence of it. He did not regard epithelioma of the pinna as very rare. He had recently been collecting records of cases. The text-books said epithelioma of the ear was rare and sarcoma rarer. Sarcoma certainly seemed rare; in the statistics of the Glasgow Ear Hospital quoted by Connal at the Otological Congress in 1899 it was stated that out of 15,000 cases there were ten of malignant disease of the ear, six of which were epithelioma and four sarcoma. Judging by the records which he had been looking up recently, it seemed very uncommon to find glandular enlargement unless the case had become very bad indeed. He was quite willing to have the specimen examined by the Pathological Committee, but suggested that they should see the section which was already cut before cutting the specimen which had been put up. In answer to Dr. Law concerning the second case, no instillations had been used, and he could not obtain any history of previous treatment having been employed. In reference to the suggestion of coal-dust as a cause, he thought that if that had been so there would have been dust in the other ear also, but it was free. He had not compressed the internal jugular vein. He believed the membrana flaccida was normal, and the blueness was chiefly on the anterior half of the posterior inferior quadrant of the membrane. But if it were an enlarged jugular bulb would the sound of the Eustachian be as clear as he could assure members it was? Also, would there not be a venous hum with the diagnostic tube? He thought those conditions were arguments against it being a jugular bulb.

DEMONSTRATION ILLUSTRATING PATHOLOGICAL CONDITIONS FOUND IN
THE HUMAN LABYRINTH.

BY ALBERT A. GRAY.

(1) Slide showing a calcareous deposit in the common limb of the superior and posterior canals. There was no affection of hearing nor any disturbance of equilibrium during life. The subject was nineteen years of age at death.

(2) Slide showing calcareous deposit in the left vestibule. The subject had suffered from deafness and giddiness several years before death.

(3) Slide showing the right ear from the same patient.

(4) Slide showing vestibule and canals from a case of suppura-

tive disease of the labyrinth. No clinical history was obtained beyond the fact that the patient was deaf in the affected ear. No history of disturbances of equilibrium was remembered by the patient's friends.

(5) Slide showing the cochlea from the same case. The soft structures have for the most part been destroyed.

(6) Slide showing the labyrinth from a case of otosclerosis (*vide Brit. Med. Journ.*, November, 1905). Calcareous deposits are to be seen in the lowest whorl of the cochlea. This fact was referred to in the original paper.

DEMONSTRATION ILLUSTRATING THE COMPARATIVE ANATOMY OF THE LABYRINTH OF THE MAMMALIA.

BY ALBERT A. GRAY.

(1) The membranous labyrinth of the Beisa antelope. The slide showed the typical labyrinth of the ungulates. The cochlea is flattened like that of the human subject. There is a very small perilymphatic space in the semicircular canals.

(2) The membranous labyrinth of the sheep. There is but little difference between this and that of the antelope. Both are typical ungulates.

(3) The membranous labyrinth of the pig. It differs from the other ungulates in the fact that there are three and a half turns in the cochlea. There is a slightly marked perilymphatic space in the semicircular canals.

(3 a) The membranous labyrinth of the puma. The slide showed the typical labyrinth of the carnivora. The cochlea is of the pointed type, and there is practically no perilymphatic space in the canals.

(4) The membranous labyrinth of the cat. Typical carnivora.

(5) The membranous labyrinth of the mouse. The slide showed the organ as found in the rodents.

(5 a) Labyrinth of the dancing mouse.

(6) The membranous labyrinth of the porpoise. The slide showed the typical labyrinth of the cetacea. The canals are very small, while the cochlea is large. There are one and three quarter turns in the cochlea. Otoliths of a somewhat large size are to be seen in the vestibule.

The PRESIDENT, in the name of the Society, thanked Dr. Gray for the valuable series of specimens and photographs he had shown.

Mr. YEARSLEY asked how many dancing mice Dr. Gray had examined. He (Mr. Yearsley) recently came across Cyon's researches which were published in Pflüger's *Archiv für die Gesamte Physiologie*, Bd. lxxix, Heft 5, p. 211, 1900, "Ohr Labyrinth, Raumsinn und Orientung." He there stated distinctly that the dancing mouse had only a single semicircular canal developed, namely the superior. After describing what he termed their "furious and interminable waltzes," he said that between times they slept or ate. They danced especially at night, and it was especially the smell of their excrement which excited them to dance. The record then went on to say that they were almost deaf, only hearing the very high tone of their own voice. When their noses were closed with collodion they stopped dancing. Every obstacle stopped them; they could not climb on an inclined plane of 45 degrees by day, but were able to do it by night. Cyon established therefrom some connection between vision and the vestibule, and suggested vision gave them vertigo. He pointed out that pigeons with injured semicircular canals could, after a time, orient themselves by means of vision, but that if they were blinded they lost their equilibrium again. When dancing mice were blinded with collodion they ceased their normal movements and began to turn somersaults in every direction, losing equilibrium like pigeons which had been operated upon. Cyon stated the mice had then to be kept in a hammock to prevent them injuring themselves. They lost the faculty of dancing and made movements which they never made in the normal condition. Although artificial blinding so upset those animals, yet in the normal state they danced perfectly well by night. He (Mr. Yearsley) was under the impression that Cyon's remarks did not agree with the observations of others, especially as to the condition of the labyrinth, and he would be glad to hear if Dr. Gray could give any additional information on the subject. The dancing mouse was simply a domestic variety of the common house mouse (*mus musculus*), and any diversity of opinion might be due to the fact that they were comparable to deaf mutes (human), and consequently exhibited a variety of pathological conditions. Therefore he had obtained the mice which he exhibited in order that Dr. Gray might prepare their labyrinths. He added that these mice seemed perfectly able to move in a straight line forwards or backwards, that they could climb and feed like normal mice.

Dr. URBAN PRITCHARD said he was particularly interested in labyrinthine research, because he had worked at it from a different

point of view. Like man, the monkey had an increased number of air-cells compared to any other animal. That number increased as one ascended the lamina spiralis. The number of turns of the cochlea varied very much. The least number was in the duck-bill, which had the least bit of turn at the end. Next came the porpoise, which was exceedingly flat, and made about one turn and a half. The dancing-mice waltzed round in all directions. One would never expect that the semicircular canals were affected simply from observing those animals. It had been suggested that the cause of the waltzing was that the Japanese from generation to generation had kept dancing mice closely confined, and that the habit was inherited and accentuated in succeeding generations.

Dr. EDWARD LAW asked whether their behaviour had been observed in the presence of a common cat. Did they waltz or run away from the cat under such trying conditions?

Dr. GRAY, in reply, said he had examined two normal mice and one dancing mouse, both ears. With regard to the number of turns in the cochlea, he had not examined the duck-billed platypus, and had not one to show on the present occasion; it was in course of preparation. He had with him a slide of the labyrinth of the porpoise, which he would gladly exhibit afterwards. The canals of the porpoise were not much larger than those of the mouse. There were two otoliths in the vestibule. He was procuring the labyrinth from a whale in the Shetland Islands. In stating that the ear of the monkey was similar to that of man, he only meant in macroscopic appearance. He believed the organ in the anthropoid apes was almost identical with that of man in appearance.

A CASE OF ALMOST COMPLETE OCCLUSION OF THE MEATUS, THE RESULT OF AN ACCIDENT.

By L. A. LAWRENCE.

R. B—, aged 66, was admitted lately to the Seamen's Hospital suffering from insomnia and tinnitus and headache of a severe character. The gait was irregular, and there was staggering and weakness of grip in both hands. In 1868 he was nearly killed by a blow on the head. He had syphilis in 1870 and a "fit" in 1882. During the short time he had been in the hospital he had been treated with iodide of potassium in 20-grain doses. All his symptoms had passed off, and his condition was as follows: Hearing, watch, R. $\frac{1}{2}$ in., L. $1\frac{1}{2}$ in. Tuning-fork, Rinne-Weber, R. Bone conduction normal. Left ear, fairly normal to look at. Right

ear, nearly complete stenosis of the meatus, a mere pin-point opening, through which a little fluid exuded. The tinnitus was still present, but the staggering gait and insomnia had left him; the knee-jerks were present on both sides, perhaps more pronounced on the right side. Mr. Lawrence desired suggestions for treatment.

Dr. GRANT asked how far the narrowing was found to extend by means of a bent probe—it might be possible to dilate it by a tent and then examine it further—also whether the deafness were due to a change in the internal ear.

Mr SECKER WALKER said the chief difficulty in these cases was the liability to recurrence of the contraction in the meatus. He thought the best results were obtained by making a post-aural incision, turning the ear forward, and dislocating the cartilaginous tube, excising the cicatrix, and then after splitting the floor to turn up the posterior wall of the tube and suture it into the mastoid flap, as is done in the complete mastoid operation. In this way subsequent contraction was entirely avoided.

The PRESIDENT thought something should be attempted in the case, because though on first examining the patient the ear looked dry, on pressing in the speculum a distinct bead of pus welled up through the minute opening. Therefore some exploration should be made, the subsequent course being decided on seeing the condition of things present.

A CASE OF MALIGNANT GROWTH ORIGINATING IN THE SKIN OVER THE MASTOID PROCESS.

BY W. MILLIGAN.

E. V—, female, aged nineteen, was referred to Dr. Milligan by Dr. Nichol of Llandudno on November 29, 1905. For the previous twelve months she had been progressively losing strength and weight, and had suffered severe pain in and behind the left ear. Upon examination a growth fully the size of a tangerine orange was found springing from the tissues over the left mastoid process, involving the lower one third of the external ear and extending deeply into the tissues of the neck behind the ravines of the jaw. The growth was hard to the feel but was not fixed. An area of about the size of a shilling was superficially ulcerated, and from this frequent attacks of spontaneous hæmorrhage were common.

There were two or three enlarged glands to be felt upon deep palpation behind the posterior border of the sterno-mastoid muscle. The patient stated that twelve months previously a growth had been removed from the same situation, and that at the time of removal its size was about that of an ordinary red marble. Recurrence had, however, taken place almost immediately, and the growth had become gradually larger until it had attained its present size. An opinion had been expressed that the growth was inoperable. Against this, however, was the fact that the growth was not fixed, that apparently only a limited area of lymphatic infection was present, and that the patient was in fairly good condition. The dangers accompanying any attempt to remove the growth were pointed out to the parents, who decided that an attempt should be made to remove it. Under chloroform incisions were made in front of and behind the growth, and well away from the diseased tissue and meeting below. The lower half of the external ear was cut across, and after a long and tedious dissection the growth was removed. In doing so the carotid sheath was exposed and three deep-seated glands removed. In dissecting the growth from under the parotid gland some fibres of the facial nerve were cut through, with the result that there was subsequently marked drooping of the angle of the mouth upon the affected side. A most elaborate toilet was performed, including a careful cleansing of the carotid sheath and of all areolar tissue which could be laid hold of and dissected away. Recovery was quite uneventful, and upon the fifth day the patient was sitting up in bed.

Microscopically the growth was seen to be carcinomatous in structure, and from the appearances presented by the epithelial elements it probably originated in the sebaceous glands of the skin covering the mastoid process.

The situation of the growth, its structure and microscopic appearances, together with the age of the patient and the absence of any definite exciting cause, made the case peculiarly interesting.

Dr. JOBSON HORNE suggested that the growth might be examined by the Pathological Committee.

NOTES OF THREE CASES OF CEREBELLAR ABSCESS.

BY L. A. WHITEHEAD.

The paper will be found on p. 63 of the February issue of the JOURN. OF LARYNGOL., RHINOL., AND OTOL.

Dr. PRITCHARD expressed his pleasure on hearing Dr. Whitehead's concluding remarks. Probably all the members had been misled by the sanguine statistics of some surgeons on the matter, and had no doubt been disappointed by the small success obtained by operation. Probably at least two thirds of the cases died.

Dr. GRANT said Mr. Whitehead had pointed out a very important thing with regard to the examination of that particular area, and in a case of his own, the notes of which he was about to read, the course would probably have been shorter if he had explored the cerebellum from that direction instead of entirely through the outer part. Mr. Whitehead spoke of exploring the cerebellum, but he did not say whether it was done through that part, or by an external trephine opening in the old situation. In Dr. Grant's case the spontaneous evacuation through the anterior opening was insufficient, and the discharge only began to decrease after the counter-opening was made on the external surface.

Mr. A. CHEATLE pointed out that the triangular area described by Mr. Whitehead was really the posterior wall of the antrum, and the relation of that was very interesting. In some cases of a small antrum there was scarcely any posterior wall, and the partition was dense, while in others the posterior fossa was separated from the antrum by a very thin, translucent piece of bone. In some cases the triangular area was covered by cerebellum, in others by cerebellum and lateral sinus, and in others by the lateral sinus alone.

Mr. WHITEHEAD, in reply, said that the point he wished to emphasize was the advisability of exploring the cerebellum through that particular area wherever possible, except in the few cases mentioned by Mr. Cheatle, where the lateral sinus was in such a position as to preclude such an operation. He wished to emphasize the importance of searching that region, because even in some recent text-books, including Mr. Lake's, the advice given was to explore the cerebellum through the old route, viz. behind the lateral sinus, a practice which he thought had quite gone out of fashion. His cases seemed to illustrate very well that the region he had alluded to was the one which should be always selected for the search; the abscess would be more easily reached and better drained through this triangular area than through an opening posterior to the lateral sinus. He agreed with Mr. Cheatle that it was practically the posterior wall of the antrum, although it would be better described as the postero-internal wall.

CASE OF LATERAL SINUS THROMBOSIS TREATED BY OPERATION WITHOUT
LIGATURE OF JUGULAR VEIN. RECOVERY.

BY DUNDAS GRANT.

Florence G—, aged fourteen, was first seen on December 1, 1904, complaining of headache, giddiness, and vomiting. She had been the subject of suppuration in the middle ear for two years and had been suffering from her symptoms for a fortnight, having had several shivering attacks. Her temperature on admission was 105° F.; it was decided to operate at once, and the radical mastoid operation was carried out, with the result that the cavities of the tympanum and antrum were found full of granulation-tissue but quite free from purulent discharge of any kind; this suggested that the absence of discharge might be looked upon as an indication that there was a purulent focus elsewhere; an opening was therefore chiselled into the bone behind at a slightly higher level than the antral opening; pus escaped under pressure, forcing its way up at the side of a mass of granulation-tissue. On enlarging the opening it was found that the pus was coming, not merely from the groove of the sinus, but from the interior of the venous channel itself, which was filled with granulation-tissue and broken-down clot. The broken-down portion was scraped away till blood flowed freely from the posterior part of the sinus, into which an iodoform ganze plug was then placed. At the lower part there was found apparently healthy organising clot, and this was left *in situ*; the wound was lightly plugged with ganze and an antiseptic dressing applied. Two days later all the plugs were removed; no hæmorrhage took place; the temperature became normal, and never rose above 99·4° F. No flaps were cut in the meatus, as it was hoped that what the operator had previously seen would take place, namely, that the membranous part of the meatus would gradually dilate and become fixed to the walls of the cavity by contracting fibrous tissue. This did not take place at the time, and, indeed, the passage was so narrow as to cause some disappointment. A little discharge also persisted from the deeper parts. For about two months the discharge was frequently sucked out by means of Siegel's speculum and spirit drops inserted at intervals of one or two days. Since then the meatus had gradually dilated, so that a sufficient opening was left, and it was believed that as this process of centrifugal contraction went on it would be quite as wide as could be desired. At the present moment there was no discharge.

Twenty-fifth Ordinary Meeting, held at the Medical Society's Rooms, No. 11, Chandos Street, Cavendish Square, W., Monday, March 5, 1906.

The President, A. E. CUMBERBATCH, Esq., in the Chair.

THE PRESIDENT announced that the Extra-Metropolitan Meeting would be held in Leeds on June 23, and asked for early intimation of intention to be present.

The following communications were made :

CASE OF ABNORMALLY LARGE EUSTACHIAN EMINENCES PROJECTING INTO THE NASO-PHARYNX TO THE EXTENT OF INTERFERING WITH FREE NASAL RESPIRATION.

BY E. FURNISS POTTER.

The patient came under observation owing to a "feeling of stuffiness" in the nose. On examining the naso-pharynx two large red swellings were seen projecting from the sides of the cavity, obstructing to a considerable extent the view of the choanæ. At the first glance they gave the impression of being enlarged posterior extremities of the inferior turbinals, but closer inspection showed that the latter could be partially seen beyond. The contour of the swellings, the orifices of the tubes, and the well-marked Rosenmüller's fossæ justified the presumption of regarding them as abnormally large cartilaginous extremities of the Eustachian tubes. On digital examination the impression given to the finger was that of cartilage covered by mucous membrane, and not that of infiltration. The exhibitor was of the opinion that the enlargement was not due to a pathogenic cause, although the patient was the subject of a double otorrhœa, and muco-pus could be seen adhering to the mucosa of the naso-pharynx. In his experience the case was unique; he thought it was simply an anatomical abnormality.

The case had been shown elsewhere, and the opinion had been expressed that the swelling was due to infiltration, the result of the irritation of the purulent discharge. This view could hardly be tenable, as cases with otorrhœa and muco-pus in the naso-pharynx were met with every day, while the condition of this patient was one of extreme rarity.

Dr. EDWARD LAW said he had certainly seen several similar cases, and he did not think the condition was caused by any dis-

charge coming through the Eustachian tubes from the middle ears. When examined carefully a number of bands could be seen forming crypts in Rosenmüller's fossæ, in which secretion accumulated and became a source of irritation. He had seen cases where there was a prominent and enlarged posterior lip, and if one put the patient under an anæsthetic and scraped Rosenmüller's fossæ out with the finger or a suitable spoon a great deal of the swelling disappeared and certainly the colour became much less vivid. It was not merely a prominence of the posterior lip of the Eustachian tube, but the lip took quite an unusual course, and it looked in the present case as if it ran from the upper border of the Eustachian tube as far as the palate as a band about one inch and a half in length.

Dr. JOBSON HORNE said he saw the case last November, at a meeting of the Laryngological Society of London, and the impression he derived was that it was in a measure due to pathological causes. Dr. Law's remarks reminded him of a case he himself showed at the Laryngological Society some years ago, before there was an Otological Society, in which otalgia of uncertain origin was present; on examination of the posterior nares one saw an accumulation of mucus covering enlarged Eustachian cushions. Upon removing that he met with ulceration in the deeper recesses. After treatment the otalgia disappeared and the enlargement of the Eustachian cushions subsided.

Mr. SECKER WALKER asked whether the enlargement gave rise to symptoms, or whether the enlargement was discovered in the ordinary course of examination.

Mr. MACLEOD YEARSLEY said he did not think it likely that the enlargement would be caused by suppuration, but he remembered one case in which a patient with one suppurating ear had the Eustachian eminence somewhat larger than on the other side. That might have been only a coincidence.

Dr. DUNDAS GRANT said he had seen several cases of enlargement of the Eustachian eminences, but none in which the colour was so high. He believed there was an inflammatory condition as well, which was confirmed by the appearance of the vault of the naso-pharynx, in which there was a mass of adenoids bathed in muco-pus. He believed Dr. Law's view was correct, and that the swelling would partially subside.

Dr. FURNISS POTTER, in reply, said the only symptom complained of was a feeling of "stiffness" in the nose. The hearing was much impaired from chronic suppurative middle-ear disease,

affecting both ears. Against the view that the condition might be due to infiltration was the fact that on digital examination of the prominences the impression conveyed to the finger was that of cartilage covered by mucous membrane, there being no sensation of pulpiness. He did not quite follow Dr. Law's meaning, but certainly agreed that the shape was not that of the normal cartilaginous extremity of the Eustachian tube. The patient had been irrigating the naso-pharynx with alkaline lotion for the last four or five months, but the condition had not shown any alteration during this period. In reply to the President's suggestion, he said he would report the result of any operative treatment which might be undertaken.

CASE OF OTITIC EXTRA-DURAL ABSCESS, ASSOCIATED WITH PARALYSIS OF SIXTH CRANIAL NERVE AND DOUBLE OPTIC NEURITIS.—WITH REMARKS.

BY J. STODDART BARR.

This patient, a lad, aged seventeen years, first came under my observation on November 2 last, suffering from a purulent discharge from his right ear of sixteen months' duration.

The symptoms which excited alarm and led him to seek medical advice were: (1) headache, which began a fortnight previously, chiefly frontal, but extending also over the back of the head; it was more or less constant, and at times very severe; (2) a feeling of chilliness or slight shivering experienced several times about nine days before coming under observation (this never amounted to a distinct rigor); (3) sickness and vomiting, which recurred several times when he experienced the slight shiverings; (4) double vision and squinting of the right eye of five days' duration. There was no vertigo, with the exception of slight attacks following the syringing of the ear. There were no reliable data as to temperature or pulse before coming under notice.

When first seen, patient, although pale and ill-looking, was bright and intelligent, and gave ready answers to questions. His temperature was 98.4° F. and his pulse 70. He frequently covered his right eye with his hand to prevent him seeing double. He complained of headache. There was, however, no excessive drowsiness. There were no paralytic phenomena unless in the eye. The knee-jerks were not well marked and ankle-clonus was absent. There was no disturbance of taste or smell. The tongue was clean

but the bowels were constipated. The urine contained neither sugar nor albumen.

Ear condition.—There was considerable discharge of rather offensive matter from the right ear. After syringing the ear it was seen that there had been extensive destruction of the tympanic membrane, only the anterior fourth remaining. Small masses of cholesteatomata protruded from the atticus tympanicus. There was no tenderness on pressure or otherwise over the mastoid region or in the neck. The tick of a watch, normally heard at 40 inches, was heard only half an inch off. The left ear was normal.

Eye condition.—Dr. Rowan, ophthalmic surgeon, reported as follows: "The right eye won't pass the middle line outwards; there is paralysis of the right external rectus, causing diplopia, otherwise the eye movements are normal. The pupils respond sluggishly to light and accommodation. The left pupil is larger than the right, when at rest it is about two-thirds dilated. The pupils retain the relative difference in size even when acting. Ophthalmoscopic examination with undilated pupil showed, in right or affected side, marked optic neuritis, optic disc swollen, vessels enlarged, etc., but the edges of the optic disc can be faintly made out. The swelling amounts to about 1.5 mm. In left, the optic disc is more swollen than the right, the edges blurred and vessels full. The swelling amounts to about 2 mm. In neither were any hæmorrhages seen."

After consultation with my father it was decided to clear out the middle-ear cavities. On the day following, therefore, I performed the radical mastoid operation. The antrum was deeply situated, small in size and surrounded by dense hard bone, and filled with cholesteatomatous material, which also occupied the aditus and the attic. This was cleared away and the walls were thoroughly curetted, and although there was no special guiding track upwards, I thought it right to expose the dura mater over the roof of the middle ear, and it appeared healthy. Backwards, however, towards the sinns the bone was noticeably softer, and, on making a horizontal incision backwards, and removing the bone by chiselling till the sigmoid groove was opened, a small collection of pus was found between the bone and the dura mater forming the sinus, at the median aspect of the latter. The sinns being further exposed to the extent of fully an inch, its wall was found to be covered with granulation-tissue, but as palpation did not indicate the presence of a thrombosis, and in the absence of signs of general septic infection, it was not opened. The cavities were

douched with 1 in 20 solution of carbolic acid, iodoform powder was freely applied to their surfaces, and finally they were loosely packed with iodoform gauze. The horizontal part of the external wound was stitched, but the vertical portion was left open.

After the operation the temperature and pulse remained almost uniformly normal. The headache quickly disappeared, the pupils became equal, and the paralysis of the sixth nerve began to abate, although slowly, and it did not entirely pass off until after about three months. The optic neuritis, on the other hand, took a puzzling course; it actually increased in intensity, and on December 1, 1905, four weeks after operation, Dr. Rowan reported that the condition suggested an albuminuric retinitis, there being exudation and some small hæmorrhages present. Dr. John Love, consulting physician, saw the patient at this stage, and he was also impressed with the resemblance to the condition seen in chronic kidney disease. Repeated examination of the urine failed to show the slightest trace of albumen or sugar. Dr. Finlayson also kindly saw the patient and took a favourable view of the prospects, and neither Dr. Finlayson nor Dr. Love looked upon the paralysis of the sixth nerve as meaning a grave intra-cranial lesion.

The middle-ear cavities were treated by regular packing with strips of iodoform gauze, and now the external wound has healed with the exception of a small orifice, leaving a T-shaped linear scar. The interior of the ear is not yet completely dry; the patient's general health seems to be satisfactory.

Dr. Rowan examined the eyes on February 27, and reported as follows: "Eye movements normal, no strabismus or double vision. Pupils respond normally to light and accommodation.

"*Ophthalmoscopic examination.*—Pupils fully dilated with homatropine and cocaine.

"Right.—Optic disc swollen and pinkish, neuritis passing off. The vessels, arteries and veins, which are much smaller than normal, come forward and then curve back to the level of the fundus. No hæmorrhages seen, though carefully looked for. The macular region itself seems normal.

"Left.—Optic disc similar to the right, but paler in colour and not so much swollen. On the temporal side, about half a disc's breadth from the apparent margin of the optic disc, there are numerous white plaques parallel to the disc; vertically they extend about twice the disc's breadth, horizontally about half a disc's breadth. The individual white plaques appear about the size of an ordinary

pin-head. On the nasal side of the disc there are similar white plaques, numerous but not larger than pin-points, and only visible when carefully focussed. No hæmorrhages seen, though carefully looked for. The macular region itself appears normal."

Remarks.—Three features of this case are specially worthy of attention—(1) the absence of definite symptoms pointing to the exact nature and situation of the lesion present; (2) the presence of an intense double optic neuritis only beginning to pass off four months after the radical mastoid operation and removal of the extra-dural abscess; (3) paralysis of the right sixth cranial nerve completely disappearing three months after operation.

(1) Such symptoms as have been described occurring in a patient suffering from chronic purulent middle-ear disease, namely, optic neuritis, paralysis of the right sixth cranial nerve, headache, chilliness, and vomiting, *associated with normal temperature and pulse*, seemed to be significant of some form of intra-cranial mischief. In considering the question of cerebral abscess, which the symptoms at first suggested, it was specially noted that there was no drowsiness nor slow cerebration, that, indeed, the patient was bright and intelligent, and that there was no involvement of the third nerve; while, in considering the question of lepto-meningitis or of septic sinus thrombosis, the absence of a high temperature, or of violent oscillations of temperature, seemed to exclude these grave conditions. The absence of pain over or behind the mastoid, and the normal temperature which existed, at all events while he was under our observation, seemed singular in a case of suppuration around the sigmoid sinus with involvement of its walls. In these diagnostic uncertainties it was evident that my first duty was to clear out the middle-ear cavities and be guided by the condition found. This operation, which included the exposure of the sigmoid sinus behind and the dura mater above, proved not only a diagnostic measure of great value, but a most successful therapeutic one.

(2) It is, of course, well known that optic neuritis is common in such intra-cranial lesions as brain abscess, lepto-meningitis, and thrombosis of the lateral sinus, but to find it on both sides and in so intense and persistent a form, associated with a moderately-sized extra-dural collection of matter, is certainly much more rare. In looking over the literature of the subject, I notice that Barker, in his Hunterian lectures on intra-cranial inflammations starting in the temporal bone, describes a case very similar to this one, and other writers mention optic neuritis as a possible accompaniment of extra-dural abscess, without, however, mentioning individual

cases or that they had found it in their own experience. It is to be remembered, on the other hand, and this is an important point, that a few cases have been recorded of optic neuritis occurring in persons with simple chronic middle-ear suppuration and presenting no other symptom of intra-cranial or vascular mischief. Both Politzer and Barker report slight forms of such. This is, I think, well worthy of further investigation, and, through the kindness of Dr. Rowan, the ophthalmic surgeon, we are at present engaged in the examination of the eyes of hospital patients suffering from middle-ear discharge, to determine whether any, and, if any, what proportion are the subjects of optic neuritis.

(3) In regard to the third interesting feature, there are very few records of paralysis of the sixth cranial nerve in connection with these intra-cranial complications of purulent ear disease. Knapp, of New York, describes in the *Archives of Otology*¹ a case very similar to this one, but different in so far that it was associated with a distinct diffuse lepto-meningitis and by the death of the patient. One would have expected that the sixth nerve would have been more frequently involved than the optic, when we consider the fact that, in its long course from the lower border of the pons to the optic foramen, it comes into much closer relation than the optic with the region of the sigmoid sinus and the cranial walls of the ear.

It is no doubt somewhat difficult to explain the exact pathological connection between such a comparatively small collection of pus in the neighbourhood of the sigmoid sinus and the nerve-lesions producing these ocular phenomena. The most ready explanation is that from the septic pachymeningitis around the sinus there extended, by microbic infection, more deeply a basal localised lepto-meningitis which, through the pia mater, involved the adjoining sheath of the sixth nerve or the more distant optic nerves. Such localised forms of lepto-meningitis must be very different from the fatal diffused forms with which we are too familiar in connection with purulent ear disease. Why the lepto-meningitis should remain localised and attended by no violent psychical or pyrexial symptoms as in this case, and in others become extensively diffused, with high fever and great sensorial disturbance, it is difficult to explain. I regret that no bacteriological examination was carried out, as this might have shed some light upon this point.

It might be that, on the other hand, the nerve-lesions were

¹ Vol. xxxi, No. 5, p. 374.

due to a thrombosis originating in the sigmoid sinus, the walls of which were undoubtedly involved, although there were no signs of systemic infection. Such an hypothesis would imply the extension of thrombi against the circulation to the cavernous sinus, and either by stasis of the circulation involve the optic disc, or, by pressure upon the sixth nerve cause the paralysis of the external rectus. I hope to receive further light on these interesting points from some of the members present.

Mr. ARTHUR CHEATLE said paralysis of the sixth nerve was not uncommon; he had seen it in all sorts of circumstances. He believed it was due to a pachymeningitis in the posterior fossa. He had recently had under his care a case like Mr. Barr's, in which the pachymeningitis could be seen extending along the back of the temporal bone. The paralysis of the external rectus when it existed alone, he thought, did not show a gross intracranial lesion beyond localised pachymeningitis, and it was always recovered from. Optic neuritis, he believed, often lasted a long time, but it was not generally noticed, perhaps because the case was not looked at again after the operation.

Dr. MACNAUGHTON-JONES remarked, in reference to the retinal appearances which had been observed in the case, though albumen was absent from the urine, that white patches and spots, similar to those seen in albuminuric retinitis, as in Bright's disease, and in the albuminuric appearances seen in pregnancy, were frequently observed in other conditions, but more particularly in leukæmia, and in leucocythæmic states. It was practically impossible to distinguish them from those of albuminuric retinitis. The practical bearing of this fact was the importance of estimating the number of leucocytes and the condition of the blood.

Dr. PRITCHARD expressed his agreement with Mr. Cheatle's remark. It was extraordinary that the paralysis of the sixth nerve should be practically always recovered from. In some of the acute cases it passed off rapidly. He remembered a case in which it appeared to pass off completely in six days. He could not understand it because the course of the sixth nerve was so short that one could localise where the mischief had extended to very easily, and that was a very long way from the mischief in the antrum. It was important to remember that this was not such a serious symptom as one would expect.

The PRESIDENT expressed regret that Mr. Barr was unable to be present to respond to the discussion.

NOTES OF AN UNUSUAL AND FATAL CASE OF CEREBRAL ABSCESS.

BY SECKER WALKER.

The following are notes of a case which did not appear at first sight to present any great difficulty, or even to be of a serious nature, yet it subsequently became very grave and terminated fatally.

The patient, a woman aged thirty-four, came to the Leeds Infirmary in March last complaining of considerable pain in the right ear, with purulent discharge of three weeks' standing. The pain was localised by the patient in the meatus, which was extremely red, swollen, and tender; there was some localised mastoid swelling, apparently glandular, and this part was tender. On account of the external otitis it was not possible to see the drum membrane, but the discharge was free, and there did not appear to be retention of pus. The diagnosis I made was a subacute otitis media, the irritating discharge of which had produced an external otitis, with subsequent infection of the gland on the mastoid.

Under hot fomentations and local antiseptic treatment the swelling and pain disappeared in three days, and at her urgent request the patient went home. She returned a week later, on March 21, with a recurrence of the mastoid pain and tenderness, but no swelling. Temperature was 98.4° F. The symptoms again subsided, and by March 24 there was only very slight tenderness behind the ear, the meatus was much less swollen, and the aural discharge was subsiding.

The following night there was a very severe attack of pain, lasting several hours, and on the morning of the 26th there was considerable œdema and tenderness on the mastoid, extending forwards to the temporal region. During the five previous days the temperature had averaged 99° F., never having risen above 100° F., and the pulse varied from 72 to 84. There had been no shivering, vomiting, or headaches, in fact, no symptoms suggesting any extension of the disease deeper than the middle ear. Temperature 98.4° F.; pulse 84.

In view of the recurrence of the œdema I operated at once. A small quantity of pus lay superficial to the bone behind the meatus, and was being forced out under some pressure through small openings in the bone in the squamo-mastoid suture. The gouge was entered here rather behind the usual position, and the first removal of bone exposed the lateral sinus, but did not open the vein.

In consequence of the slope of the bone there was very little room

in front, so the further chiselling was carried upwards and forwards in the direction from which the pus came and entered a large subdural abscess over the roof of the antrum and middle ear, extending inwards some distance. On opening up the antrum and middle ear a sequestrum composed of the anterior part of the roof, with the malleus and incus, was found and removed. The bony cavities were well cleaned out, and the subdural abscess cavity gently syringed. The condition improved for a few days, then pain returned, temperature rose to 101.6° and pulse 84. The wound became slightly foul, but there was no discharge from the abscess cavity; the patient seemed incapable of the slightest reaction. Temperature fell to 97.8° , pulse to 60 and during the night fell to 44. Vomiting occurred once; there was no paresis. Early optic neuritis on the side of the disease was first seen now, although it had been looked for before. In the morning a further operation was performed. A portion of squamous and parietal bone over the region of the temporo-sphenoidal lobe was removed by enlargement in the upward direction of the previous opening. The dura was incised and a bent glass drainage-tube pushed in to the brain. Immediately a quantity of thin, foul-smelling pus was evacuated under great pressure. The finger passed into the abscess cavity could feel its limits. The walls were soft and presented no appearance of a capsule.

The pain in the head was relieved, but the temperature and the pulse remained low, drowsiness, developing into coma, came on, and the patient died on April 6.

At the *post-mortem* examination, conducted by Dr. Wardrop Griffith, there was a singular absence of cerebro-spinal fluid; no meningitis was found. There was a large abscess cavity, quite empty, in the right temporo-sphenoidal lobe, extending down to the descending cornu of the lateral ventricle; the choroid plexus was adherent to the outer wall of the cornu, and this had prevented invasion of the cavity of the ventricle, the walls of which were green in colour. The brain-tissue for a great distance beyond the cavity was stained a canary yellow; in all other parts the brain was quite healthy. The lungs, the heart, and the kidneys were normal.

Condition of the temporal bone.—During the operation an opening was made through into the groove of the lateral sinus; it was not made intentionally, but served to show the condition of the vein. A large opening in the roof of the middle ear and antrum was present; this was partly made by the chisel and

partly by the sequestrum. The case appeared to be one of an acute necrosis; for, in addition to the roof of the middle ear, a part, if not the whole, of the external semicircular canal was necrosed, though not yet loose. The head of malleus was carious and hollowed out into a mere shell; the incus was in a similar condition, but unfortunately was lost.

The chief difficulty in this case was the absence of any local or general signs of extension of the disease deeper than the middle ear. The symptoms pointed to an external otitis secondary to otitis media, and as far as I could read the case the primary condition of the middle-ear disease was proceeding quietly and satisfactorily.

It was the recurrence of the oedema that made me operate. The patient did not look or complain of being ill: the pain was of the character of external otitis, the swelling on the mastoid appeared to be, and, I believe, at first was due to an inflamed lymphatic gland.

At no time before the first operation were there any general symptoms of extension of the disease, such as a raised temperature, a quickened pulse, headache, shivering, or vomiting.

Mr. CHEATLE asked whether it was an acute case. If it were acute necrosis and osteo-myelitis one would have expected severe constitutional symptoms all the time. It was possibly a chronic case, with pus tracking round the meatus, making the meatus look as if it were inflamed. Was Mr. Walker sure of the history?

Dr. DUNDAS GRANT asked whether there was any explanation of the actual cause of death, as the operation appeared to have been proved by the *post-mortem* examination to have been eminently satisfactory.

Mr. SECKER WALKER, in reply, said he was unable to obtain any history of previous disease. She was married, aged thirty-four, and an intelligent woman. Although he thought there might have been chronic otorrhœa, the patient was sure that there had not been. It was common to have a difficulty in hospital practice in getting a truthful history. A patient would say she was certain there was no discharge when one could actually see pus in the ear. He had hesitated to suggest the term "acute necrosis," but he thought it was a necrosis which had come on suddenly in a large part of the ear and in the semicircular canals. The pathologist reported that he did not see why the patient should have died. Death seemed to have been due to asthenia, and symptoms of compression appeared a few hours before death.

Post mortem nothing was found to suggest compression. The brain was explored in all parts for further abscess, but nothing was found, and therefore he could not give any actual cause of death.

PROCEEDINGS OF THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

General Meeting held on Friday, January 5, 1906, at the Medical Society's rooms, 11, Chandos Street, Cavendish Square, W.

The President, Dr. R. H. WOODS, in the Chair.

(Continued from page 106.)

Dr. WYATT WINGRAVE showed the following *Microscopic Specimens, with Notes*: (1) *Angeio-myxoma from Floor of Nose*; (2) *Angeioma of Larynx*; (3) *Rodent Ulcer of Nose*.

(1) *Angeio-myxoma of nostril*.—This innocent growth was removed from the floor of the left nostril of a man, aged fifty-five, by Mr. Nourse. It consisted of fixed and wandering connective-tissue cells, with a few white or gelatine fibres imbedded in a matrix of mucin. The greater portion, especially deeply, was pierced by irregular vascular channels whose walls were thin and composed almost entirely of endothelial cells with a few visceral muscle-fibres. They varied considerably in size, showing apparently a very tortuous course. The whole mass was covered with ciliated epithelium. Dr. Wingrave said solid growths of the meatal floor were very rare, especially vascular. He had only experienced three which were sufficiently large to cause symptoms. Of the three growths one was glandular and the others vascular. Cysts, however, were not uncommon.

An interesting paper was read at this Society on cysts in this particular region by Brown Kelly in 1898. He furnished sections illustrating its minute anatomy. Unlike the turbinals, "erectile" or "cavernous tissue" did not occur here, hence the rarity of vascular growths in this region, while gland elements being well marked, cysts were, therefore, much more likely. Dr. Wingrave's

experience was, however, that no portion of the nasal mucous membrane was free from angeiomatous tumours, although that was the first time he had found one restricted to the floor of the nostril.

(2) *Angeioma of larynx*.—This small tumour was removed from the left vocal cord of a man, aged forty-three, by Mr. Nourse. It consisted almost entirely of dilated blood-vessels with very thin walls, held together by white films, a few elastic fibres and fixed connective-tissue cells. Some of the vessels contained old white clot, laminated and organising, while in a few the clot was red, recent, and extended as extravasation through the ruptured wall into the adjacent connective tissue. There was some slight evidence of lymphocytosis, and the surface was covered with normal stratified epithelium.

The high vascularity and general arrangement were strongly suggestive of a small hæmorrhoid.¹ The specimen was interesting since it illustrated a very numerous type which was commonly and erroneously called papilloma of the larynx. It was not a papilloma, since it had nothing characteristic of a wart in structure, the bulk of the tissue being mesoblastic in origin, while the papilloma was mainly epithelial. Of innocent growths of the larynx described clinically as papillomata there were in his hospital and private collections ten specimens such as this which were purely angeiomata or fibro-angeiomata. It further recalled a similar specimen which he exhibited to the Society (*vide Transactions*, vol. i) fifteen years ago. The growth to which he referred was shown by Mr. Lennox Browne from a male, aged forty, who suffered with hoarseness and vocal fatigue of two and a half years' duration. Its detail was almost identical with the specimen now shown. Fortunately, he was able to show, not only a drawing, but also the original slide.²

These cases were interesting from the light which they threw upon the pathology of this class of growth, for an examination of all the specimens showed a gradually increasing hyperblastic vascularity from a simple hyperæmia up to permanent distension, thrombosis, and extravasation, conditions to which the positions and functions of the structures rendered them specially liable. In most of the published details of such growths it was worth noting that pigment was described. That was present in his own specimens, and doubtless resulted from old blood extravasations and was in no small measure further indicative of their chronicity.

¹ JOURNAL OF LARYNGOL., RHINOL., AND OTOL., vol. v, p. 296.

² "The Throat and Nose and their Diseases," p. 659, 5th edition, 1899.

(3) *Rodent ulcers of the nose.*—There were two examples shown illustrating different stages of development.

(a) Was removed by Mr. Nourse from a female, aged fifty, and presented all the characters of the so-called adenomatous stage, and apparently started from the sebaceous glands. There were no "nests" and no "pearls," and cicatricial formation was scanty.

(b) Was removed by Dr. Wylie from a female, aged sixty, who had noticed it as a wart all her life, which scabbed and lately grew much larger. This showed a distinct tendency to form pearls and to be connected with the Malpighian epithelium. There was not so much suggestion of alveolation, but much cicatrization. In both cases the site was similar, viz. on one side of the nose, and the extension was sub-epidermal.

With regard to the adenomatous or alveolar stage Dr. Wingrave interpreted its existence as not so much representing a stage common to all, but as being due to the origin of the growths in the sebaceous glands and for a while retaining their type, and, starting in the deepest layers of the epidermis, assuming characters more like those of a squamous epithelioma. Gametoid changes in the nuclei were not well marked in either.

Thus there were four features which distinguished rodent ulcers from true squamous epitheliomas—viz., (1) general absence of pearls or nests; (2) absence of lymphocytosis—*i. e.*, in outer cell invasion, except when irritated and in late stages; (3) high stability of the epithelial cells; (4) a marked tendency to fibrosis or cicatricial change rather than breaking down. Gland infection by the epithelial cells was rare, the thickening when present being only inflammatory.

The PRESIDENT read a paper entitled "*The Dental Saliva-Ejector as a Surgical Instrument.*"¹

Mr. DENNIS VINRACE regarded the apparatus as a great *desideratum* in oral surgery, and expressed his indebtedness to the President for bringing the instrument to the notice of the Association. He also asked the President to kindly put on record the name of the firm who supplied him, as he felt sure that many members would wish to possess the apparatus. He scarcely approved of attaching the instrument to a water-tap used for domestic service.

Mr. CHICHELE NOURSE said that while listening to Dr. Woods'

¹ Vide JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1906, p. 61.

paper it occurred to him how little they were acquainted with the ingenious appliances used by dental surgeons, some of which, as now exemplified, might be equally useful for their own purposes.

Mr. H. BARWELL expressed his indebtedness to the President for this useful hint. He asked whether it were necessary to have the water supply close to the operating chair.

NOTES.

SOCIÉTÉ FRANÇAISE D'OTOLOGIE ET DE LARYNGOLOGIE.—The annual *réunion* of this Society will take place on Monday, May 14, 1906, and following days, at the Hôtel des Sociétés Savantes, 8, Rue Danton, Paris. The meetings will commence at 9 a.m. Discussions will take place on: "The Treatment of Deviations of the Septum" (introduced by MM. Mouret and Toubert); "Diffuse Osteo-Myelitis of the Cranial Bones, consecutive to Suppurative Otitis and Sinusitis" (introduced by M. Guisez). Members of the Society desirous of making any communications are required to send the titles thereof to the General Secretary, Dr. Joal, at 17, Rue Cambacérès, Paris, before April 20. The British corresponding members will not easily forget the cordial reception which they have always received from their French *confrères*, and it is to be hoped that as many as possible will take the opportunity of representing this country and visiting Paris at a time of year when its attractions are at their height.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY will hold its twelfth annual meeting, under the presidency of Dr. James E. Logan, at Kansas City, Mo., on Monday, Tuesday, and Wednesday, June 11, 12, and 13.

Abstracts.

MOUTH.

Ramon, de la Sota (y Lastra Seville).—*Obscure Lesion of Mouth.* "Archives Inter. de Laryngologie, d'Otologie," etc., May—June, 1905.

The patient, a young girl aged seventeen, a member of a distinguished family, had a small ulcer at the corner of the mouth: later a fissure of tongue appeared, followed by enlargement of maxillary glands. Owing

to the social position of the patient, and the danger of making a false diagnosis, nothing was said as to the probable nature of the disease.

Under anti-syphilitic treatment the patient rapidly improved, and on the return of her brother from the country a cicatrix on his lip explained the source of the infection.

Anthony McCall.

NOSE.

Guisez.—*Concerning Paraffin Endonasally as Supplementary Treatment of Sinusites.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," December, 1905.

The writer observes that as a sequel to radical operations for sinusitis, especially ethmoidal, even after successful results as far as the sinusal disease is concerned, patients frequently suffer from a train of troubles, such as crusting of the nasal fossæ, dryness of throat, and pharyngitis. For anatomical and clinical reasons the generality of chronic frontal and, *a fortiori*, fronto-maxillary sinusites are associated with panethmoidal disease, so that nothing short of a complete *evidement* will suffice to meet these cases. After the sinusal trouble has been eradicated, the fossæ are left abnormally capacious. The nasal mucosa is changed by its long contact with pus, and yields a fluid secretion which inspissates, forming crusts. These adhere tenaciously, and are with difficulty dislodged, owing to low pressure of air during "nose blowing," consequent upon the inordinately large nasal cavities. In the author's experience antiseptic dressings, lavages, and vibratory massage have afforded only temporary relief. Out of four cases treated by the submucous injection of paraffin, details of which are given *in extenso*, in three crusting entirely ceased, the fourth was only improved, the reason for this being the great difficulty experienced in making the injections, the mucosa being so friable that it burst under the least pressure. The paraffin, cold and soft, was introduced beneath the mucosa of the floor and septum, the deeper parts being dealt with first. The whole operation occupied several sittings.

Clayton Fox.

Kirkpatrick, A. B.—*The Subcutaneous Injection of Paraffin for Nasal and other Deformities, and the Submucous Injection for Atrophic Rhinitis.* "The Therapeutic Gazette," January 15, 1906.

A short *résumé* of the work of other observers, with four of the author's cases.

Macleod Yearsley.

King, Gordon.—*A Voluminous Papilloma of the Nasal Cavity.* "New Orleans Med. and Surg. Journ.," January, 1906.

A negro woman, aged forty-eight. Fifteen years' history. Growth removed without difficulty. It was attached to the middle turbinal and ethmoid region, encroaching on antrum and orbit. Microscopical examination showed it to be a "cylindrical papilloma."

Macleod Yearsley.

LARYNX.

Zia, Noury (Constantinople).—*A Rare Case of Foreign Body in Larynx.* "Archives Inter. de Laryngologie, d'Otologie," etc., May—June, 1905.

A child aged six, whilst taking some soup, was suddenly seized with symptoms of suffocation, which gradually passed, leaving the voice hoarse. For some days slight attacks of suffocation persisted, with intervals of quiet respiration and no difficulty in swallowing.

On laryngeal examination, the ventricular bands were seen to be swollen, obscuring the vocal cords, but no foreign body could be detected.

Radiography revealed no foreign body, but on the twelfth day it was found necessary to perform tracheotomy. After four days the dyspnoea reappeared, necessitating laryngo-fissure, and on wiping the wound three pieces of egg-shell were found adhering to the gauze tampons. The larynx was immediately closed and the tracheotomy tube removed on the fourth day; all laryngeal symptoms disappeared, the voice remaining slightly hoarse.

Anthony McCall.

Koplik, H. (New York).—*Congenital Laryngeal Stridor; a Contribution to the Pathology of the Affection, with Report of an Autopsy on a Case.* "Arch. of Pediat.," December, 1905.

The author's case occurred in a male child, aged one year. Stridor noticed since age of three weeks; became worse at five months. Ten weeks before consultation the infant was attacked with "convulsions," followed by fever and left otorrhœa. On admission, the child showed slight rachitis, but was not cyanotic, nor did it show any suprasternal retraction. There was great retraction of the diaphragmatic groove. The thoracic physical signs revealed acute broncho-pneumonia, and the child died of heart failure twenty-four hours after admission.

Autopsy.—Extensive broncho-pneumonia. Thymus 25 grammes. Epiglottis curved backwards, and lying over superior laryngeal opening. Lateral borders of epiglottis in contact, leaving a slit of from $\frac{1}{2}$ mm. in its greatest extent from the lip of the epiglottis to $1\frac{1}{2}$ mm. at the arytenoids. Aryepiglottic folds almost in contact, thin and membranous. The opening of the larynx was narrower than normal, not admitting the smallest size one-year intubation tube. The interior of the larynx revealed nothing pathological.

Macleod Yearsley.

ÆSOPHAGUS.

Capart.—*Diverticulum of the Entrance of the Æsophagus—Operation—Cure.* "La Presse Oto-Laryngologique Belge," January, 1905.

The author thinks that this condition is less rare than is usually supposed; it is, however, very difficult to diagnose. The first symptom observed by his patient, a man aged fifty-seven, was a peculiar noise in swallowing. This was followed after some months by bloody expectoration, and then by unpleasant sensations and undue moisture in the throat. At night the mouth became full of saliva and the patient woke half choked. The expectoration varied according to the food he had taken.

The diagnosis was confirmed by a radiogram taken after the ingestion of a large dose of bismuth nitrate. The operation presented no difficulty. An incision in front of the sterno-mastoid exposed the sac, which was dissected out. The patient was fed by an œsophageal tube for four days. Recovery was uninterrupted, but a large abscess formed in the neck nearly three months after the operation. It healed in three weeks, and since then the patient has gained weight and has remained well.

Chichele Nourse.

EAR.

Bryant, W. S. (New York).—*Obstruction of the Eustachian Tube and its Treatment.* "Archives Inter. de Laryngologie, d'Otologie," etc., May—June, 1905.

After pointing out the disastrous results to hearing if this condition is not treated, the author proceeds to demonstrate that, except in suppurative cases, the stricture is rarely organic, but functional. He emphasises the intimate relation that exists between the inferior turbinate, the fossa of Rosenmüller, and the orifice of the Eustachian tube, and believes that, by the application of silver nitrate and adrenalin, it is rarely necessary to use insufflation. Any obstruction to nasal breathing or post-pharyngeal growth should, of course, be treated.

Anthony McCall.

Bloch, Maurice (Paris).—*On the Employment of Borate of Soda in Ear Cases.* "Archives Inter. de Laryngologie, d'Otologie," etc., May—June, 1905.

The author claims that the insufflation of this powder in contact with moisture produces peroxide of hydrogen in a nascent state, and, being alkaline, has a soothing effect in the mucous membrane. In his experience, it gave better results than any other remedy.

Anthony McCall.

Shambaugh, G. E. (Chicago).—*Communications between the Blood-vessels in the Membranous Labyrinth and the Endosteum and those in the Bony Capsule of the Labyrinth.* "Arch. of Otol," vol. xxxiv, No. 6.

The writer found that the labyrinth of the embryo calf, at the stage when its capsule was at the transition from cartilage to bone could be cleared up by means of creasote, so that the blood-vessels previously injected through the foetal circulation became visible. He convinced himself that there was free communication between the vessels of the membranous labyrinth and those of the capsule and, therefore, with those of the tympanic cavity. His observations thus corroborate those made by Politzer in contradistinction to Hyrtl's opinion, that the blood-vessels of the labyrinth formed a closed system. The article is clearly illustrated.

Dundas Grant.

Dixon, G. Sloan (New York).—*Report of a Case of Panotitis resulting in Meningitis, with Pathological Findings.* "Arch. of Otol," vol. xxxiv, No. 6.

There was erosion of the superior semicircular canal and of the segmen atri. Pus was found round the stapes penetrating the vestibule and in

the internal auditory meatus, and there seemed reason to suppose that the invasion of the internal ear from the middle dated from an examination of the left ear with a probe which produced great giddiness and weakness. All the cavities were filled with pus or granulation-tissue or both, but in the cochlear duct there were chiefly small hæmorrhages. There was pus in the sigmoid sinus. The otitis was apparently of an ordinary acute pneumococcal nature.

Dundas Grant.

Eagleton, P. Wells (Newark, N. J.)—*Infective Arthritis complicating Otitis Media*. "Arch. of Otol.," vol. xxxiv, No. 6.

Infective arthritis is often of otitic origin, and may be due simply to toxins, to invasion by the micro-organisms themselves, or to involvement by a neighbouring osteo-myelitis. Most of the joint affections following sinus thrombosis are toxæmic and often subside without local treatment. Among the true infective cases, such as those due to the invasion of the joint by the pneumococcus, the ear is the original point of entrance. Arthritis secondary to osteo-myelitis occurs chiefly in young children, and the osteo-myelitis (of the diaphysial end of the epiphysis) is apt to be overlooked in the presence of a general pyæmic condition. Early aspiration in any arthritis appearing during the course of otitis media or sinus thrombosis is necessary, so that the effusion may be submitted to microscopical and bacteriological examination in regard both to prognosis and treatment.

Dundas Grant.

THERAPEUTICS.

Delneuveville, E.—*The Treatment of Affections of the Throat, the Nose, the Ears, and the Eyes by Carbonic Acid Gas at Spa*. "La Presse Oto-Laryngologique Belge," April, 1905.

Besides the employment of the mineral waters of Spa, which contain from 2 to 3·4 grammes of carbonic acid per litre, as douches, sprays, or local baths, the author recommends the inhalation of carbonic acid gas, for periods not exceeding half an hour, in special rooms, where the atmosphere is charged with it to the extent of from 1 to 5 per cent. Another method of using the gas is to direct a small jet for five minutes on to any spot in the interior of the nose which requires treatment. The author has found treatment by carbonic dioxide useful in ozæna, in chronic rhinitis, in hay fever, in chronic pharyngitis, and in acute coryza.

Chichele Nourse.

THERAPEUTIC PREPARATIONS.

PARKE, DAVIS & Co., 111, Queen Victoria Street, London, E.C.

Acetozone Inhalant.—The solution of acetozone (benzoyl-acetyl-peroxide) is powerfully germicidal, yet non-toxic and practically harmless to animal tissues. Acetozone Inhalant contains 1 per cent. of acetozone

with 0.5 per cent of chloretone. The solvent is a specially pure neutral liquid paraffin. Acetozone Inhalant is useful in all infectious or bacterial diseases of the nose, mouth, ear, or throat, also in bronchitis, laryngitis, and other inflammatory conditions of mucous membrane accessible to spray.

"*Glaseptic*" *Nebuliser* (P. D. & Co.).—A very effective instrument for nebulising or atomising liquids of practically any density or viscosity. With the exception of a rubber bellows it is made entirely of glass, and thus there is no possibility of corrosion and contamination. It is easily rendered aseptic; it is capable of being used with only a few drops of liquid, and it can be closed with a cork stopper to prevent evaporation or oxidation of its contents, and to allow of its being carried without danger of leakage.

Adrenalin Inhalant (P. D. & Co.).—A solution of adrenalin chloride (1 in 1000) in an aromatised neutral oil base containing 3 per cent. of chloretone. Its remarkable astringent and ischæmic properties render it of great value in the treatment of hay fever and chronic nasal catarrh, also in pharyngitis, tonsillitis, laryngitis, etc. It is applied to the nasal passages or the mucous membrane of the throat in the form of spray. The soothing and antiseptic properties of chloretone are of great assistance in the treatment of painful affections and those attended with purulent secretion.

Nasal No. 34 Tablets (P. D. & Co.).—Each tablet contains: Sodium bicarbonate, sodium baborate, and sodium chloride, of each 5 grains; sodium benzoate and sodium salicylate, of each $\frac{7}{24}$ grain, with oil of eucalyptus, thymol, menthol, and oil of gaultheria. One dissolved in two ounces of tepid water forms a useful alkaline douche, gargle, or spray for the nose or throat. This solution may be employed to cleanse the nasal passages before treatment with Acetozone Inhalant or Adrenalin Inhalant.

Throat, Mentholated (modified) (P. D. & Co.). (Compressed Tablet 427).—Each contains: Menthol $\frac{1}{35}$ grain, benzoic acid $\frac{1}{12}$ grain, oil of anise $\frac{1}{80}$ minim, and eucalyptol $\frac{1}{10}$ minim. This formula differs from the well-known Throat Mentholated (Compressed Tablet No. 330) only by the omission of cocaine hydrochloride, $\frac{1}{280}$ grain. One tablet allowed to dissolve in the mouth occasionally is very useful in inflammation of the throat and bronchi, allaying cough and facilitating expectoration.

BOOKS RECEIVED.

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. lxxxviii. London: Longmans, Green & Co. 1905.

C. G. Coakley, M.D. *A Manual of Diseases of the Nose and Throat.* Third edition. Revised and enlarged. Illustrated with 118 engravings and 9 coloured plates. London: Henry Kimpton. 1906.

G. Laurens, M.D. *L'otite moyenne purulente aigue et son traitement.* Paris: Baillière et Fils. 1906.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

Original Articles are accepted by the Editors of this Journal on the condition that they have not previously been published elsewhere.

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A CASE OF FIBRO-SARCOMA ARISING FROM THE THYROID MEMBRANE.

BY KNOWLES RENSCHAW, M.A., M.D.(CANTAB.),

Assistant Physician Manchester Hospital for Consumption and Diseases of the Throat.

SARCOMA of the larynx is, I think, sufficiently rare to make the following case of interest:

The patient, a man aged twenty-nine, a weaver, came to me complaining of an enlargement over the thyro-hyoid space and upper part of the thyroid cartilage; he had first noticed a thickening in this position about two years previously; this had steadily increased. About ten months before I saw him his voice became hoarse and he began to have difficulty in swallowing; lately there had been considerable pain, running up to the left ear.

On examining his neck I found a smooth swelling in the middle line extending from immediately below the hyoid to about halfway down the thyroid cartilage and spreading on either side almost to the posterior margin; it was firm and elastic to the touch, and appeared to be tightly bound down to the thyroid cartilage. There was no tenderness on pressure. A laryngoscopic examination showed that the laryngeal mucous membrane was congested; the entire anterior wall was displaced slightly backwards, and so had become more visible than is usually the case; there was also a

slight bulging to be observed in the middle line a little above the anterior commissure.

In making a diagnosis, the only conditions, besides neoplasm, which suggested themselves as causes of enlargement in this neighbourhood were a distended sub-hyoid bursa and an abnormal growth of thyroid gland tissue in the line of the thyroglossal duct. The former was rendered unlikely by the fact that a distinct, though narrow, interval could be felt between the hyoid bone and the tumour. I made the matter certain by inserting an exploring needle; a little blood only escaped into the syringe. It was more difficult to be certain that the tumour was not composed of thyroid gland tissue, especially as the patient's thyroid gland was very small. The firmness of the mass, however, and the way in which it was bound down to the thyroid cartilage, made it very improbable.

On February 9 a median incision was made over the tumour. Under the thyrohyoid muscle a definite capsule was found; on incising this the growth was exposed. It had a very irregular surface, was about the size of a walnut, pale grey in colour, and fairly soft to the touch. It did not in any way resemble thyroid gland tissue. Anteriorly and laterally it was completely encapsuled, posteriorly it dipped down between the thyroid cartilage and the thyro-hyoid membrane, from the lowest part of which it took its origin. Some difficulty was experienced in separating this part of the growth from its connections. The mass having been excised, the wound was closed, a gauze drain being left in for twenty-four hours. The patient made an uninterrupted recovery, and when seen a month later the pain and difficulty of swallowing had quite disappeared. These symptoms were due, I think, to the pressure of the growth under the cervical fascia forcing the larynx backwards.

A microscopical section of the growth shows that it consists mainly of fibrous tissue, with many small patches of reticular lymphoid tissue; there are also, however, large masses of small round cells, which are undoubtedly sarcomatous in type.

Sarcomata vary much in their rate of growth, but this case has been particularly slow. Another interesting point in the case is the presence of a capsule, so rarely found in growths which are not of an innocent nature.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundred and Fifth Ordinary Meeting, April 6, 1906.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

The following communications were made :

A CASE OF SUDDEN LOSS OF VOICE.

Shown by Dr. H. J. DAVIS. The patient, a man aged forty-three, had had sudden loss of voice fourteen days previously, following "a cold"; the cords were subacutely congested, the left cord was fixed. The case was shown for diagnosis.

Dr. Davis said he thought the man had had his cord fixed for some time, and on this had supervened an attack of acute or sub-acute laryngitis. It was probably a coincidence. He did not know of any disease which would produce fixation on one side completely in a fortnight. There seemed to have been no loss of voice previously. The chest showed no signs of aneurysm or tubercle, though the patient said he was getting thinner. He had been in the Army in India. There was scarcely any sputum to examine for bacilli.

Mr. CRESSWELL BABER said there was a good deal of swelling of the left ventricular band as well as want of movement in that cord. He could not say what the nature of the case was. It might be either syphilitic or tubercular.

Mr. ATWOOD THORNE pointed out that the patient gave a history of fracture of the base of the skull two years ago.

Dr. DUNDAS GRANT thought the case was well described as fixation of the left cord rather than paralysis. He believed the fixation was due to a mechanical local process. Like other speakers, he did not think the fixation was likely to have come on in the short time specified in any other form than as an acute arthritis of the joint, which would almost certainly have been accompanied by pain. It was very probably due to old specific trouble, and the present sudden loss of voice was attributable to laryngitis following a "cold."

Dr. STCLAIR THOMSON thought the diagnosis could be narrowed down to specific disease or tubercle. The man stated that he had lost two stones in weight, which was a considerable reduction. He (Dr. Thomson) had a suspicion that there was something like ulceration. He

agreed as to its being fixation and not paralysis, and that there was diffuse infiltration about the cord. The situation was towards the arytenoids.

The PRESIDENT said the general pallor in the larynx, which was described as "subacutely congested," struck him as supporting the view that the condition was tubercular, especially when taken with the great loss of voice. There was a fair approximation of the cords.

Dr. DAVIS, in reply, said that if the paralysis of the cord on the left side had only come on during the last fortnight coincidently with the laryngitis, there would have been more paresis in the other cord. His opinion was that he had had trouble there for some time. He was still able to talk. The acute laryngitis probably called attention to a condition which had existed for some time.

A CASE OF NASAL OBSTRUCTION.

Shown by Dr. DAVIS. The patient, a man aged sixty-two, complained of nasal obstruction of fourteen weeks' duration on the right side following facial paralysis; the asymmetry in the apertures of the nostrils was still marked. Under the electrical treatment the condition was improving.

Mr. CRESSWELL BABER drew attention to the deflection of the septum; the anterior edge of the cartilaginous septum projected into the right vestibule and helped to produce the obstruction.

Dr. WILLIAM HILL said in his experience such a condition sometimes caused annoyance after facial paralysis in connection with aural disease. A week or two ago he had a patient who had had facial paralysis, but in whom a good deal of movement had returned; he did not worry whether he could quite close his eye, but wanted to breathe through his left nostril. He was recently having electricity twice a day, ten minutes at a sitting; but that did not answer, therefore he put in a celluloid plug, and that cleared up the disability at once. The patient was very much relieved, both in mind and in regard to respiration.

A CASE OF ABSENCE OF THE RIGHT CHOANA.

(Shown at the previous meeting, March 2, 1906.)

Shown by Mr. E. B. WAGGETT. The patient, a boy aged seventeen, had had symptoms, pointing to the absence of the right choana, dating from infancy. The face was symmetrically developed.

Dr. WILLIAM HILL said he was not sure whether the reference to absence of the right choana was not a terminological inexactness, because he found the patient had got an anterior naris. He believed that in rhinological literature the term "choana" was applied to the whole cavity of the posterior and anterior nares.

Mr. CRESSWELL BABER, in answer to Dr. Hill, said that the term "choana" applied to the posterior aperture of the nasal cavity.

Dr. DONELAN said he had referred to a Greek dictionary, which said

that "choana" was equivalent to the Latin "infundibulum." A man who was a great drinker in ancient Greece was called a choana. The term referred to the funnel-shaped space leading to the oesophagus. It was quite incorrect to speak of "posterior choana," though usage allowed "posterior nares."

Dr. SCANES SPICER said Dr. Donelan's rendering of the meaning of the word "choana" was doubtless correct, but in the conventional use of the term in rhinology it signified the opening of the posterior nares.

Mr. WAGGETT explained that he brought the case because he thought the condition rare. The boy had never had any breathing space through his right nose, which was quite normal and well developed, except that there was no posterior orifice, the choana being blocked by a bony wall. There seemed to be almost perfect symmetry of the face, and the palate was not very ill formed, for the reason, he took it, that breathing had been very adequately conducted through the left nose, which was large. The boy had not suffered from the effects of nasal obstruction. He was aware that there were adenoids and catarrh present. Three months ago he came with subacute otitis media on both sides.

Dr. DUNDAS GRANT reminded members that he once brought forward a case (December 13, 1893) with obstruction of one posterior choana and with asymmetry of the face, but the atrophy was on the opposite side to the obstruction. Shortly afterwards Mr. Baber showed a similar case.

Dr. H. PEGLER asked whether the cases shown by Dr. Grant and Mr. Baber some time ago were not cases of web-like formations.

Dr. GRANT replied that in his case there was a web-like formation, but the obstruction was complete.

Mr. CRESSWELL BABER, in reply to Dr. Pegler, said he showed his case in 1893. The patient was a boy aged six, and his right choana was completely obstructed, the obstruction being partly membranous and partly bony. The right cheek, the affected side, was more prominent than the left.

Dr. LAMBERT LACK said that the great interest of this case was that the teeth were equally irregular on both sides, the palate was high equally on both sides, and the face was as symmetrical as that of most people, although the nasal obstruction was entirely unilateral. These facts had an important bearing on the etiology of these deformities of the palate and teeth. If, as he maintained, the deformity was the direct result of the increased tension of the soft tissues of the cheeks, which in turn resulted from keeping the mouth open, it did not matter which side of the nose was blocked provided that the nasal passages were insufficient and the patient was compelled to keep the mouth open. The effect of the open mouth was then bound to be symmetrical deformity, as in a case which he had shown at that Society the patient had one side of his face paralysed for many years. In this case the deformity was unilateral, because the paralysed side of the cheek was flaccid, and consequently could exert no increased pressure. These two cases taken together were the strongest proofs in favour of the theories which he (the speaker) had always supported.

Dr. SCANES SPICER said it was important to decide the fact whether there was facial asymmetry or not. Last time he saw the case he thought there was not, but subsequent inspection under different illumination led him to think there was. There was a noted Cambridge school of anthropology, and Mr. Waggett would be doing the Society a service if he would have careful anthropometric measurements made. He judged the left

side of the face to be decidedly broader than the right. No one dreamed that nasal respiration was the only factor in bringing about the evolution of the face. Ziem, in his elaborate monograph ('*Monats. für Ohrenheilk.*,' Berlin, 1883) mentioned many other momenta; and nasal obstruction on one side would not of itself cause such an enormous difference in the two sides of the face that accurate measurements were superfluous. But assuming the patient's face was symmetrical, each time he had examined the boy he found the left side blocked as much as the right, practically a bilateral stenosis. The same thing had been noticed in Zaufal's case (quoted by Ziem in his monograph), that of a girl aged seventeen, who had bony obstruction on one side and catarrhal obstruction on the other, so that the nose was practically entirely blocked. The eyes also should be examined, as he believed there would be found a considerable difference in the shape of the eyeballs on the two sides and astigmatism. There seemed also to be too much sclerotic showing. In many ways the lad's physiognomy was unusual and peculiar.

The PRESIDENT said some years ago he had a couple of cases of unilateral and one of bilateral congenital atresia of the choanæ, and in the unilateral cases certainly there was no asymmetry. Both were relieved by operation. In those cases on which he had operated he noticed that whereas the two bony margins of the aperture were in close apposition, there was a little membranous material between the two. That was also the case in the patient shown by Mr. Cresswell Baber. He doubted whether there was any real bony fusion between the two sides; there was usually a little aperture which could be got through. He understood the boy had adenoids, so that they should be taken into consideration in accounting for the appearance of the face.

Dr. LOGAN TURNER thought the remarks which had been made suggested that the examination as to asymmetry should not be limited to the face but should include the limbs. The '*Edinburgh Medical Journal*' of last November contained the record of a very interesting case in which there was asymmetry.

Dr. PEGLER asked whether Mr. Waggett proposed to do anything to open up the atresia.

Dr. H. J. DAVIS agreed with Dr. Scanes Spicer as to the presence of asymmetry in the boy's face. If he were set to draw the face he would make it wider on the left side.

Mr. WAGGETT, in reply, said he had been seeing the boy about three months, during the early part of which he could breathe perfectly through his nose. His adenoids were now becoming troublesome and must be dealt with. He did not yet know whether he would operate upon the nose. There might possibly be slight want of symmetry in the face, but not more than was seen in a large proportion of normal persons. Some people thought that the development of the facial sinuses was dependent upon the function of respiration. But in this boy the antrum was very well developed, although connected with a nose which had nothing to do with respiration. The speaker could not help looking upon the tongue as the prime factor in determining the formation of the mouth. It was the principal muscular organ of mastication, and with the subsidiary muscles (*e.g.* masseters) moulded the facial skeleton. The plastic influence of that remarkably powerful muscular action was at play throughout the twenty-four hours, under normal circumstances, and where mouth-breathing existed the tongue could no longer mould the palate, and as a consequence the alveolar arch developed no proper lateral expansion, and the narrow

(so-called "high-arched") palate resulted. In this boy, thanks to his thoroughly adequate left nose, nasal breathing had been largely practised and the tongue had moulded the palate into very fair form. The palate was symmetrical.

A CASE OF ULCERATION OF THE LEFT CORD.

Dr. KELSON showed a man aged twenty-six suffering from ulceration of the left vocal cord. Patient had been hoarse for three months; he had not lost weight, and no lung changes had been detected, but there was a family history of phthisis. The sputa were very scanty and had not been examined. There was no history of syphilis. The posterior half of the left cord was ulcerated, but it moved well; the right appeared to be normal. No enlarged glands could be felt.

Dr. DUNDAS GRANT thought the case was tuberculous.

Dr. SCANES SPICER thought the case had the red, angry look of a specific ulceration. Moreover it was unilateral.

The PRESIDENT asked whether any remedies had been tried.

Dr. KELSON, in reply, said iodide of potassium had been given for two months, and the case appeared now to be exactly where it was before.

Dr. H. J. DAVIS said if the case was tubercular iodide of potassium given for two months would have made the condition worse.

INSTRUMENTS FOR SUBMUCOUS RESECTION OPERATION.

Shown by Dr. H. SMURTHWAITE. In rectifying septal deflections by means of the submucous resection operation our two greatest difficulties are (1) the commencing separation of the muco-perichondrium, (2) the cutting through the cartilage previous to separating it from the muco-perichondrium of the opposite side. Within the last two years a number of ingenious instruments have been devised by men working in this field of surgery which have materially helped to simplify and lessen the time of operation. The use of a certain instrument is often a matter of adaptation, one man being able to do good work with one instrument, whilst another prefers some other shape. With one or two exceptions, such as Killian's plough and Hajek's chisel, I have had the instruments I use for the operation made for me by Mayer and Meltzer to my own design. Two which I have had made for me just recently were designed for overcoming the before-mentioned difficulties. One is a rougine for separating the membrane after making the preliminary vertical incision. I used to find some difficulty in getting properly underneath the perichondrium with

the straight smooth-edged elevator, sometimes merely separating the mucous portion of the muco-perichondrium, with a consequent rupture of the same when any force was applied. With this rougine, having a curve, the force can be more readily applied on to the septum and the fibrous portion of the membrane raised. After the part is once raised from the cartilage the curved separator can be used to complete the separation of the membrane. The other instrument I have is a knife for cutting through the cartilage. Its cutting edge is in a line continuous with the long axis of the handle. The instrument can thus be used like a pen, and lends itself to that delicacy of movement so necessary when cutting through the cartilage, desirous as we are of not wounding the opposite muco-perichondrium. The cartilage is cut through obliquely till the blade disappears up to the guard on the handle, the resector is then introduced, and the separation of the necessary amount of cartilage completed.

A CASE OF GLOTTIC STENOSIS.

Shown by Dr. STCLAIR THOMSON. A girl, aged sixteen, with laryngeal stenosis. This case was shown for diagnosis, which rested between functional adductor spasm and bilateral paralysis. It was difficult to apply the usual tests for making her inspire suddenly and deeply, as she was a foreigner, speaking only Russian and Yiddish. It appeared she had been some months in a Russian hospital for the same affection. He was inclined to view the case as one of functional spasm. There was a constant twitching movement of the arytenoids, although the cords did not abduct. When taken into the hospital and watched, the girl slept quietly, and only developed stridor when attention was given her.

Dr. SCANES SPICER thought the case was one of functional tonic adductor spasm, with clonic spasms superadded.

Mr. ATWOOD THORNE said that when he saw the patient she was very tired, and the right side of the larynx was absolutely fixed. The left side moved a little.

Dr. DUNDAS GRANT wondered whether Dr. Atwood Thorne was certain as to the side, because he (Dr. Grant) found the left side almost immovable, while the right had some movement. Possibly Dr. Thorne and he took different fixed points. Heregarded it as an hysterical case. Anæsthesia of the pharynx seemed to be indicated by her extraordinary tolerance of examination. She also had considerable exaggeration of the knee-jerks.

Dr. FITZGERALD POWELL thought the case should be regarded as one of abductor paresis, not total paralysis, as there was evidently some movement in the left cord. He was inclined to think that the condition was due rather to the toxin of diphtheria than to hysteria or the neurotic

element. The mother had stated that the girl had been in hospital in Russia one year ago, and that the doctor had told her that her daughter was suffering from diphtheria.

Mr. DE SANTI thought the present case of adductor spasm was very much like one he showed some time ago, and which some members mistook for double abductor paralysis. One member got her to make a prolonged "e," and she then took a deep breath and the cords abducted thoroughly. The nature of the case was eventually settled by putting her under an anæsthetic; her breathing had been so bad that his colleague, Dr. Hall, thought tracheotomy would be necessary. But under the anæsthetic the breathing became perfect. He thought the present patient should be put under an anæsthetic, when he believed she would breathe all right.

Dr. SMURTHWAITE said the patient gave a history of it having come on all at once, and that was in favour of hysteria. The cords did not come into line, there being a gap of crescentic shape between them.

Dr. STCLAIR THOMSON, in reply, said one cord seemed to be moving better than the other, which he believed to be against the view that it was functional. But still, he thought it was functional, because when she came to his throat-room she developed a good deal of stridor as she approached his chair. She was in the ward a week, and was carefully watched there at night, when there was no stridor whatever. He had never been able to get her to dilate her cords.

SPECIMENS AND DRAWINGS ILLUSTRATING VARIOUS PATHOLOGICAL CONDITIONS OF THE NOSE AND THROAT.

Shown by Dr. LOGAN TURNER.

(1) *Larynx of a boy from a case of sudden death.*—The specimen shows a large papilloma attached to the left vocal cord. Almost the whole lumen of the larynx above the level of the glottic chink was filled up by the tumour. The boy, aged ten, had always enjoyed good health, and had never required medical advice. His mother stated that she had occasionally noticed a slight hoarseness of voice, but it was never sufficiently marked to call for special advice. He had never been troubled with shortness of breath or any choking sensations, and he had been able to run about and play with other boys. He died suddenly while eating his dinner without any premonitory symptoms. He appeared to choke. Professor Harvey Littlejohn, who performed the *post-mortem* examination, very kindly handed over the specimen of the larynx to me. When the larynx was removed, the appearance presented by its upper aperture suggested its occlusion by a piece of meat. After washing the parts, and thus removing all the secretion, the upper aperture of the larynx was found to be almost completely occluded by a papillomatous tumour. When the larynx was divided and its

interior examined, the papilloma was found to be attached to the left vocal cord.

The case is one of great interest, not only clinically, but also from a medico-legal aspect. It is difficult to realise how the child had remained free from any symptom calling for medical advice.

Keratosis of the larynx.—The patient, A. R——, aged sixty-four, who followed the occupation of green keeper upon a golf course, was admitted to hospital complaining of hoarseness and some pain in the throat. He had been engaged in this outdoor occupation for ten years, previous to which he had worked as a miner in the coal-pits for thirty-five years. He had been subject to asthma for the last twenty years, two of his sisters being similarly affected. His present occupation exposes him to every kind of weather.

About twelve months before his admission he caught a severe cold; since then he has been constantly hoarse. During the last three months he has complained of occasional pain in the region of the larynx. He is also troubled a good deal with cough and some expectoration.

Examination of the nose, fauces, and pharynx showed no abnormal condition. On laryngoscopic examination, however, a very unusual appearance was observed. The upper surface of the right vocal cord throughout its entire length presented an irregular, mammillary appearance, the free edge of the cord having an irregular outline. Posteriorly this appearance was not confined to the true, but passed without any delimitation on to the upper surface of the false cord. The anterior two thirds of the left vocal cord showed an exactly similar appearance, but here the condition was limited, the false cord being unaltered and the posterior third of the true cord showing no alteration from the normal. The affected areas were of a greenish white colour. On closer inspection, the impression conveyed was that the affected parts were covered by a firm membrane made up of a number of small pin-point excrescences projecting above the surface of the surrounding mucous membrane, not unlike a number of small stalagmites, which could not, however, be separately differentiated the one from the other. Dr. McBride, who saw the case with me, expressed the opinion that it was probably one of keratosis of the larynx. This view was confirmed by microscopic examination; under cocaine anaesthesia I removed with forceps a portion of the membrane, which was firm in consistence and fairly adherent to the underlying parts.

An examination of the tissue removed was kindly made for me

by Dr. T. Shennan. The pathological condition is well shown in the microscopic sections. The excrescences are made up of numerous layers of cornified epithelial cells. Upon the free surface the most superficial layer is becoming broken up into a number of small detached and semi-detached fragments, portions of which have become shed, forming *débris*. Some of the deeper cornified layers, again, present a teased-out appearance. Towards the base of the excrescence the stratified appearance becomes lost and a thick layer of epithelial cells is visible. Unfortunately, none of the sub-epithelial tissue had been removed in the forceps, so that its histological appearances are unknown. Here and there upon the surface clumps of branching mycelia are seen, evidently some form of leptothrix.

(3) *Pachydermia of the larynx*.—The patient was a married woman aged twenty-five. She was very well nourished and had always enjoyed good health. She had had two children. The family history was good, there being no lung trouble. Four years before first coming under observation she began to be troubled with hoarseness, which had continued more or less constantly since that time. The patient had no expectoration, and examination of the chest revealed no evidence of pulmonary disease.

Nothing abnormal was observed in the nose, naso-pharynx, or pharynx. On laryngoscopic examination the interarytenoid space was seen to be occupied by a greyish-white infiltration, the heaping up being greater in the mesial plane. The surface presented a slightly uneven appearance, but there was an absence of any mesial furrow. The posterior third of the right vocal cord had a ragged, eaten-out appearance, suggestive of a tuberculous ulceration. The left vocal cord was perfectly normal. The long duration of the symptoms and the absence of any evidence of tubercle in the lungs favoured the diagnosis of pachydermia.

(4) *Diffuse papilloma of the larynx*.—A woman, aged forty-four, had suffered from hoarseness for eight years, with gradually increasing difficulty in breathing. Since childhood she appears to have had frequently attacks of hoarseness, but these were associated with colds, and the voice was not permanently impaired until eight years ago. She had never had the larynx examined until the autumn of 1905. She has occasionally coughed up small pieces of "flesh," but no bleeding occurred at these times. Difficulty in breathing has been increasing lately. Her general health is good. Her father died of phthisis.

When the larynx was first examined the anatomical structures

beneath the upper aperture were not recognisable; both false cords, the true cords, and the posterior surface of the epiglottis presented a mass of papillomatous-like tissue, the lumen of the cavity being very much diminished.

The whole of the tumour, with the exception of one or two fragments, has been removed, piece by piece, by endolaryngeal operations. The microscope has revealed nothing but simple papilloma structure.

(5) *Fibroma of the larynx*.—The patient, a male, aged thirty-three, had complained of slight hoarseness for several months. Laryngoscopic examination revealed the presence of a small, pink tumour attached to the free edge of the left vocal cord at the junction of its anterior and middle thirds. The tumour was somewhat pear-shaped, with its long axis lying in the antero-posterior diameter of the glottic chink, the larger end of the growth being anterior. It was attached to the vocal cord by a short pedicle situated about the centre of the tumour. On phonation it became tilted on to the upper surface of the left cord, thus allowing the two cords to approximate, a circumstance which accounted for the small amount of hoarseness of voice which was present.

(6) *A case of lobulated, encapsuled tumour attached to the posterior wall of the naso-pharynx which presented the clinical features of a simple tumour, but which microscopically proved to be a sarcoma*.—A male, aged fifty, a house painter, had always enjoyed good health. He presented himself for examination because a friend of his had recently undergone an operation for malignant disease of the throat. He gave the following history: Two years previously he had suffered from a severe cold accompanied by pain in the throat. While examining his own throat he noticed a swelling of some size, which at the end of about a fortnight burst and discharged a white, tough material which the patient says he was able to remove by means of a fork. Healing took place, but some swelling has persisted since that time. It has given him no trouble for the last two years, but for the reason stated above he sought medical advice. Examination of the pharynx revealed nothing abnormal, the soft palate presenting a normal appearance and not bulged forwards. By a peculiar movement, evidently acquired by practice, the patient was able to draw his soft palate upwards, so that he could then bring into view when the mouth was opened a tumour which projected downwards and forwards beneath the elevated palate. The mass which thus became visible was of firm consistence, circumscribed, but freely movable upon the posterior

wall of the naso-pharynx to which it was attached. It was encapsuled and lobulated, four small lobules making up the main mass of the tumour. There was no ulceration of the surface, but a few small distended veins were visible upon its surface. There was no pain on pressure. There were no enlarged cervical glands. There was evidently no attachment to the periosteum of the vertebræ or basis cranii, the mucons membrane of the posterior naso-pharyngeal wall being the seat of attachment.

The tumour was easily dissected out under local anæsthesia, an incision being made round its base of attachment. It had no deep attachments. The base of the tumour measured two inches in circumference. One year after the operation the patient was in excellent health—merely a smooth cicatrix was visible and there were no enlarged cervical glands.

The microscope shows that the tumour is made up of sarcoma-cells of the round-celled variety. The tumour has a dense fibrous capsule.

(7) *Ulceration and destruction of the soft palate and posterior pharyngeal wall.*—The patient was a woman aged thirty-seven, the subject of acquired syphilis.

(8) *A dense fibrous tissue diaphragm completely shutting off the pharynx from the naso-pharynx with the exception of a small, circular aperture placed mesially, which admitted the point of a surgical probe.*—The patient was a young woman aged twenty, the subject of hereditary syphilis. It was found on operation for removal of the diaphragm that both choanæ were completely obstructed by dense fibrous tissue.

(9) *Large cyst of the right ventricular band.*—The patient was a labourer, aged forty-seven, who had first noticed slight hoarseness two years before he came under examination. This at first tended to become worse, but during the last eighteen months the voice has remained much the same, being characterised by a moderate degree of hoarseness. During the last three or four months he has had difficulty in swallowing water, a choking sensation being produced during the act. Solid food was swallowed with ease. Lately during exertion he has had some difficulty in breathing, but not when at rest or when lying in bed—otherwise he enjoys good health.

Laryngoscopy showed the interior of the larynx almost completely filled up by a large, smooth, spherical swelling occupying the position of the right ventricular band, and concealing from view both true cords and a portion of the left false cord. The

swelling extended outwards and involved the right ary-epiglottic fold, passing even beyond that, while anteriorly it passed on to the posterior aspect of the epiglottis. It presented a tense appearance, the vessels upon its surface being dilated, and giving the impression that there was fluid within the swelling.

Under cocaine the tumour was incised with Heryng's knife; it immediately collapsed, a quantity of clear, gelatinous-like material being extruded and spat up. Some thickening of the right ventricular band remained for a considerable time, but at the end of a year all trace of the cyst had disappeared.

Dr. PEGLER said, in reference to the case of keratosis of the larynx, it had just been stated that there were only four recorded cases of that condition. He believed, however, that the case of the patient with white acuminate excrescences on the vocal cords, shown by Dr. Scanes Spicer at the last meeting, was one of keratosis of the cords due to *leptothrix buccalis* or *mycosis*. It corresponded, as suggested by Sir Felix Semon at the time, closely in appearance to this drawing of Dr. Logan Turner's case. He (Dr. Turner) had kindly consented to send a microscopical specimen to the Society so that the sections of the two cases could be compared.

WOMAN AGED FIFTY WITH MALIGNANT GROWTH IN NASO-PHARYNX; QUESTION OF OPERATION.

Shown by Mr. DE SANTI. This patient has a large cauliflower-like growth in the naso-pharynx, growing downwards so as to be visible in part below the level of the palate. It is hard to the touch and extensive in its attachments. There are deep-seated glands in the neck. She has had sore throat since the summer, but until lately has not consulted any medical man. She is brought before the Society for an expression of opinion about operation. Mr. de Santi considered the condition to be too extensive for operation.

Mr. CRESSWELL BABER asked whether the patient had been given iodide of potassium.

The PRESIDENT thought it seemed too deep for operation. There was tenderness over the glands, but he could not say whether they were infected.

Dr. LOGAN TURNER recommended putting the patient upon iodide of potassium if that had not been done. There was an absence of the characteristic cervical glandular enlargement such as one would have expected with malignant disease.

Mr. DE SANTI, in reply, said the patient had not been given iodide of potassium; he only saw the patient a few days ago. He would do so, although he considered that no benefit would accrue. There were deep-seated glands to be felt in the neck.

CARCINOMA OF THE NASO-PHARYNX.

Shown by Mr. CHARTERS SYMONDS. Mr. T—, aged fifty-five, was brought to me for a gland in the right side of the neck and for some deafness and obstruction of the right nostril. There was found projecting a rounded swelling, quite easily seen, concealing the right Eustachian tube and obstructing the nostril on the right side. The lump was smooth in outline, firmly attached to the pharynx; the surface appeared to be unbroken, but it had bled a little on handling. There was one principal gland beneath the sterno-mastoid on the right side and one or two smaller ones.

As the growth seemed to be irremovable he was put upon arsenic, and at the end of a fortnight there was a distinct improvement in the size of the cervical glands, and when last seen (March 27, 1906) the glands seemed to be still smaller, but the growth remained in about the same condition. The view I took of the case was that, from the situation of the disease, from its character, and from the enlarged glands, it was not worth while to submit the patient to an operation as it would be impossible to completely extirpate the disease. It may be added, moreover, that he has been operated upon successfully for cataract, and though fairly vigorous in other respects, this indication of senile change must also be taken as operating against interference. When shown at the meeting the growth projected towards the soft palate, having increased considerably.

The PRESIDENT said he regarded the case as inoperable, but possibly others might take a different view.

Dr. DUNDAS GRANT said the question arose whether the immobility of the right half of the palate was due to the mechanical pressure of the growth, or to involvement of the vagus nerve by the growth. Perhaps the President could say, if he had palpated it.

The PRESIDENT, in reply, said he thought the effect produced was mechanical; the palate was not infiltrated, but was very much pressed forward.

A WOMAN WITH LARGE SESSILE TUMOUR IN LEFT ARYTENOID REGION.

Shown by Mr. CARSON.

Dr. WILLIAM HILL said the cord moved very fairly on that side, and it occurred to him that it was not the arytenoid at all which was very much involved, but that the growth came from the upper and back part of the cricoid. If digital examination were made under an anæsthetic, it might be localised a little more certainly. It might be sarcoma.

Dr. SCANES SPICER said the condition might be ulceration of an encapsuled fibroma.

The PRESIDENT said he feared it was epithelioma of the pharynx, coming up from below and involving the arytenoid region in that direction. One could see a broad ulcerating surface, and it was very solid. To the finger it was not so hard as ordinary epithelioma. Epithelioma in a woman was particularly apt to involve that region. The present patient was older than most he had seen, and he thought but little could be done for the condition.

Mr. DE SANTI regarded it as a case of pharyngeal epithelioma similar to those described by Professor Gluck. The only thing which it was possible to do for the patient was to remove the whole pharynx and larynx, as Professor Gluck did. The patient, however, might not survive it.

Mr. CARSON, in reply, said there would be no difficulty in removing a piece of the growth for microscopical examination. That he proposed to do, and would report the result later.

A MAN WITH AN ULCERATED SWELLING IN THE MIDDLE LINE OF THE NASO-PHARYNX AND ULCERATION OF THE LEFT POSTERIOR FOLD OF THE PALATE.

Shown by Mr. CARSON.

Dr. DUNDAS GRANT thought the diagnosis lay between gumma and epithelioma. The intense hardness of the parts surrounding the ulcer suggested epithelioma, but the absence of pain was then rather difficult to explain. He did not think that feature excluded the diagnosis of epithelioma.

CASE OF FIXATION OF THE RIGHT ARYTENOID IN A WOMAN AGED FORTY; FOR DIAGNOSIS.

Shown, in the absence of Dr. FURNESS POTTER, by Dr. DAVIS.

The PRESIDENT said he noticed that there was some movement of the vocal cord, while the arytenoid seemed fixed.

Dr. H. J. DAVIS said Dr. Potter, who was absent, was very anxious to have an opinion on the case. The symptoms had been in existence only eight months, and Dr. Potter thought it very peculiar that though the arytenoid was fixed on that side the cord on that side moved. He (Dr. Davis) thought it looked like a mechanical partial fixation of the arytenoid.

A WOMAN AGED TWENTY-FOUR, WITH A SWELLING ON THE UPPER PART OF THE SEPTUM NASI; FOR DIAGNOSIS.

Shown by Dr. DONELAN.

Dr. DONELAN said the swelling had disappeared, and there was hæmorrhage, but that did not account for the fætor. Yesterday there was a most unpleasant odour.

Mr. CRESSWELL BABER remarked on the deflection of the septum to the right side. The swelling which had existed on the left side was probably an influenza abscess of the septum.

CHILD AGED TWELVE WITH GROWTH ON THE LEFT SIDE OF THE TONGUE.

Shown by Mr. DE SANTI. This patient was sent to Mr. de Santi from the country for operation for adenoids and tonsils. On examination of the mouth it was found that the left side of the tongue was occupied by a papillary hypertrophy extending nearly all its length. The only inconvenience to the patient was the getting of the papillary mass in between the teeth. The condition of the tongue had not been noticed by the parents.

Mr. de Santi had never before seen so extensive a papillary hypertrophy of the tongue, and proposed to remove it with a knife.

Dr. H. J. DAVIS said that he considered the condition one of lymphangiectasis, though he was really indebted to others for the opinion.

The PRESIDENT thought it was a simple hypertrophy of the side of the tongue, because it did not collapse on pressure. He did not think it was more than a redundant fold, a congenital condition. The point which would decide as to removal would be the inconvenience caused. If it got bitten and bled it should be snipped off.

Mr. DE SANTI, in reply, said the condition got in the way of her teeth, but did not otherwise inconvenience her.

CASE OF INFILTRATION, WITH FIXATION, OF THE RIGHT VOCAL CORD IN A MAN AGED FORTY-SIX.

Shown by Dr. DUNDAS GRANT. The patient is a man aged forty-six, a printer, formerly in the habit of using his voice a great deal for public speaking and preaching. He was first seen on March 2, 1905, on account of hoarseness, almost amounting to loss of voice. There was then found a swelling of the anterior part of the right vocal cord and a small growth presenting the appearance of a fibroma; this was partially removed by means of forceps and several applications of the galvano-cautery. He was then lost sight of, and in October, 1905, appeared with a red general swelling of the right vocal cord, underneath which could be seen a small, apparently superficial, ulcer of oval shape. This unilateral infiltration of the vocal cord, with the shallow ulcer on its inner border, was looked upon as probably tuberculous, especially in view of the fact that two of his children were suffering from tuberculosis; there was, however, no disease detectable in the chest, and the examination of the sputum revealed no tubercle

bacilli. He was not again seen till yesterday, and then it was found that the infiltration extended into the ventricular band and that the mobility of the vocal cord was markedly diminished.

The exhibitor would be glad of opinions regarding the appearances which, although not characteristic of malignant disease, are certainly suspicious.

The PRESIDENT thought the case was in many ways the most important that had been brought forward at that meeting. It was difficult for him to be quite sure about it, but he thought the left vocal cord was a little œdematous. He asked how Dr. Grant would interpret the condition of the left vocal cord in its relation to the right, whether it was an accidental laryngitis or not.

Dr. STCLAIR THOMSON said that if there had been no traumatism he would regard it as malignant fixation of the cord; there was a purplish look about the whole cord.

Mr. ATWOOD THORNE said he understood that some of it had been removed by Dr. Grant. He would like to know if there had been any microscopical report on the portion removed.

Dr. GRANT, in reply, said the case was first seen a year ago, when it seemed to be simple granulation tissue. He did not think there was sufficient removed to enable a microscopical examination to be made.

PROCEEDINGS OF THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

General Meeting, held on Friday, March 9, 1906, at the Medical Society's Rooms, 11, Chandos Street, Cavendish Square, W.

The President, Dr. R. H. Woods, in the Chair.

Mr. A. P. COSKEY, M.B., Ch.M., was duly elected a Fellow.

The following communications were made :

Mr. STUART-LOW showed a *Case with greatly enlarged Eustachian Cartilages.*

Mr. STUART-LOW said that he had brought forward this case as such great enlargement of the Eustachian cushion of cartilage at the abutment of the tube into the pharynx was uncommon, and such symmetry as seen in this instance very rare indeed. A method of demonstrating the opening of the Eustachian tubes was simple but

conclusive, viz., to pass a catheter into the tube, and with this in position to examine with the rhinoscopic mirror. In this way the orifice of the Eustachian tube could be plainly located. A remarkable feature of the case was the absence of symptoms of nasal or pharyngeal obstruction.

Mr. H. BARWELL asked if there were symptoms of nasal or of Eustachian obstruction.

Mr. STUART-LOW showed a *Case of Ulceration of the Auricular Lobule of Fifteen Years' standing.*

Mr. STUART-LOW said that this case occurred in his clinic some weeks ago, the woman having come complaining of irritation, sometimes amounting to pain, in the affected part, and of its unsightliness. The history was that fifteen years ago the lobule of the left ear had been pierced with a stocking needle by a female friend for the purpose of wearing an earring. Ever since there had been trouble with it, as it had never healed, and had gradually spread as a red, scaly patch over the posterior surface of the lobule. A piece had been removed for microscopic examination, and Dr. Wyatt Wingrave had pronounced it to be lupus vulgaris. The result of treatment with ointment of nitrate of mercury had been noteworthy, as the parts had almost healed over and now looked nearly normal.

Mr. DENNIS VINRACE favoured the diagnosis of lupus, and laid stress on the absence of local glandular enlargement and the chronicity in support of his conclusion. There was no suspicion of syphilis. If tubercular, it would by now be confirmed by lymphatic enlargement and pulmonary lesion. Chilblain was negatived by any evidence of sluggish circulation, and by the fact that there was no improvement in the summer-time. In chronic dermatitis a larger area would have been involved, and the condition would have fluctuated. By elimination the disease must be assigned to lupus, which in this region often showed very slow progress, was localised, and almost superficial.

Dr. W. H. KELSON thought it was a patch of chronic eczema on the following grounds: Firstly, there was hardly any scarring after fourteen years; secondly, there had been very marked improvement under dilute nitrate of mercury ointment; thirdly, although the patch had never healed, it had very nearly done so and then relapsed.

The PRESIDENT, while recognising the difficulty of the case,

was inclined to regard it as one of lupus. The extreme chronicity, coupled with the fact that there were one or two islands or out-crops away from the chief focus, looked more like lupus than simple chronic dermatitis.

MR. MAYO COLLIER showed a *Case of Syphilitic Disease of the Larynx*.

The object in showing this case was to accentuate the fact that under ordinary syphilitic treatment the larynx did not heal. Mr. Collier ordered calomel fumigation or inhalation every second day, stopping the internal administration of medicine. The larynx healed well in three weeks.

MR. H. BARWELL thought the larynx was now healed, though some interarytenoid outgrowth was present. He considered that the patient appeared to be more ill than would be expected from the laryngeal condition alone.

MR. HAROLD BARWELL showed a *Case of Lupus of the Larynx, the Palate, and the Pharynx*.

MR. H. DRINKWATER said with regard to the question of any affection of the nose in this case he thought that there was distinct evidence of involvement. On the lower border of the left inferior turbinal, at the junction of the middle and posterior thirds, there was a nodule, and the mucous membrane of the inferior meatus below this point looked very suspicious.

MR. J. BARK said it was a most interesting case; it resembled the condition of a patient who had been under his observation and treatment for about three or four years, and who did exceedingly well after removal of the affected epiglottis, etc., by punch forceps and the after application of lactic acid; the patient was a girl, now about fourteen years of age, and differed from Mr. Barwell's case in having lupus also of the vestibule of the nose.

THE PRESIDENT said he had seen a great deal of pharyngeal lupus, but never so extensive a case as this. In the treatment of these cases he now almost exclusively used the electro-cautery, and with the best results. On one occasion, when injecting a weak cocaine solution into the base of the tongue, the patient, who usually bore cocaine well, suddenly showed signs of poisoning, the result apparently of some small vein having been struck by the needle. The possibility of such an occurrence should be borne in mind in dealing with parts where there was no areolar tissue under the surface.

Mr. BARWELL had not had the case under observation long enough to have seen whether the epiglottis or arytenoids first became affected; the disease of the epiglottis was the more extensive, and was probably, as usual, the first part of the larynx attacked. He always anæsthetised with a drop-syringe and found the method very successful. He had had a similar, but less extensive, case which healed under open-air treatment and arsenic.

Mr. CHICHELE NOURSE exhibited *Two Cases showing the Results of the Radical Mastoid Operation.*

The first, a man aged thirty-one, suffering from old-standing suppurative disease of the middle ear on the right side. A polypus had been removed from the ear eight years before. He complained of continued discharge, frontal headache, and attacks of vertigo, with rotation towards the right. The tympanic cavity contained granulations. The condition found at the operation was rather unusual. A very shallow mastoid cell lay just under the cortex over the site of the antrum. It extended up to the linea temporalis and forwards into the root of the zygoma. The antrum was fairly large and was partly covered on the outer side by the middle fossa, which extended some distance below the temporal line. The lateral sinus lay very far forward. The antro-tympanic wound was soundly healed a little more than three months after the operation. Hearing for the tuning-fork had improved.

The second case, a female, aged thirty-two, had old-standing suppurative disease of the right ear, with vertigo, headache, and recurrent polypi. Caries of the ossicles and cholesteatoma were found at the operation. As soon as the bone wound was covered with granulations and was quite clean it was treated by insufflation on alternate days of dried, sterilised epidermis in powder, a preparation suggested by the speaker's colleague, Mr. Stuart-Low, and especially prepared for him. On February 24, between six and seven weeks after the operation, the ear was completely healed. (When shown at the meeting the antro-tympanic cavity was still granulating at one point, which had apparently broken down again, and there was some narrowing of the deeper parts.)

These cases were shown mainly with the desire of eliciting the opinions of the Fellows upon the best mode of after-treatment, so as to hasten the healing process.

Mr. BARK congratulated Mr. Nourse on the successful result he had obtained, and desired to elicit from the Fellows an opinion as

to which was the best method of after-treatment to assist rapid healing and epithelialisation of the antro-tympanic cavity.

Mr. CHAS. HEATH congratulated Mr. Nourse on the result of the mastoid operation in the male patient, and agreed with his remarks as to the difficulty of laying down any hard-and-fast rules as to the after-treatment—first, because there may be eburnated bone, so hard and dense that several weeks may elapse before any granulations will form on it; secondly, there may be cancellous bone surrounding the cavity (though this is not the rule), which may rapidly produce granulations, and they may be so vigorous as to need daily repression in the cavities. It was most important to remove all mucous membrane, else the secretion from the surface seemed to hinder the healing and keep the parts sodden. This patient was an example of what he had before stated, viz., that a patent and perfect Eustachian tube was not undesirable. As to stenosis, he had hardly ever seen anything of the kind since he instituted the use of a drainage-tube at the time of the operation and kept it going in diminishing sizes until the patient was practically well.

Dr. DUNDAS GRANT thought finality had not been reached. He had seen excellent results in Mr. Nourse's hands and realised how much they depended on his personal care and attention. Uninterrupted personal attention was the best guarantee for a good result. Some cases seemed to have an innate tendency to stenosis, and would yield to nothing except re-opening and lining with Thiersch grafts. In cases of large cavities grafting was by far the best method. He advocated the retention of the lining membrane in cases of cholesteatoma if it is smooth, homogeneous, and firm. This was occasionally seen in cases of spontaneous "cures," as of cholesteatoma of the attic.

The PRESIDENT, having expressed his admiration of the result in Mr. Nourse's case, said he considered the after-treatment of these cases of no less importance than the operation. He considered grafting necessary in nearly every case and highly desirable in all. Even with grafting stenosis sometimes happened. The keynote of after-treatment lay in the repression of redundant granulations until the whole surface was ready for the graft. If this was neglected, a thick tubular layer of fibrous tissue was formed, and if its thickness exceeded a certain limit the strength of its contraction could not be resisted by its attachment to the walls of the cavity, and stricture was inevitable whether it was grafted or not.

Mr. CHICHELE NOURSE, in reply, said that one of the chief difficulties of the operation lay in the after-treatment. The time of healing was apt to be inordinately prolonged, and in some cases narrowing of the meatus would occur in spite of the utmost care. His shortest case was one which had healed completely (without grafting) in five weeks from the date of the operation. That was exceptional, and was possibly due to unusually favourable conditions in a nursing-home. The more rapid the healing process the less likely was narrowing to occur. In the after-treatment he did not use tampons. A large rubber drainage-tube was inserted in the meatus at the time of the operation and worn for about a week. No irrigation was employed, but alcohol was applied to the granulating surface, and any discharge was removed by absorbent cotton. Exuberant granulations were touched with zinc chloride solution.

Dr. WYATT WINGRAVE showed the following *Microscopic Specimens*.

Endothelioma of pharynx.—This was removed by Mr. Nourse from the lateral wall of the pharynx of a man, aged fifty-five. It was supposed to be of about ten months' duration. The growth was composed of closely packed spindle-shaped cells, epithelioid in character, growing in solid cylindrical masses, apparently following the course of vessels. They interlaced and in parts fused, while in other parts they had an alveolar appearance. Surrounding these cylinders was a stroma composed of much swollen, more slender, and faintly staining fusiform cells, but no lymphocytes, a feature in striking contrast with an epithelioma. The cells were very stable, showing no signs of asymmetry or degeneration. Mitoses were sometimes seen of a regular type. It has been remarked that endotheliomata are generally sharply circumscribed; that was not so in this case, since it was extremely doubtful if the limits of the growth had been reached by the operation, since the adjacent muscles were deeply infiltrated. The adjacent lymphatic glands were apparently not involved. A similar specimen was shown at the previous meeting from a patient of Mr. Stuart-Low's.

Granuloma of auricle.—This specimen was removed by Mr. Stuart-Low, who reported the case. It showed well-marked giant-cell masses, with epithelioid activity, imbedded in lymphocytes, strongly suggestive of lupus. Tubercle bacilli could not be found.

Epithelioma of larynx.—This belonged to the columnar or duct type, and was seen to be attacking the cartilage. It appeared to

commence in the gland ducts and to retain the type of epithelium in the shape of solid round cylinders. Irregular mitoses were well marked, together with detached chromatin granules. It was from a case under the care of Mr. Nourse, male, aged fifty-eight.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Twenty-fifth Ordinary Meeting, held at the Medical Society's Rooms, 11, Chandos Street, Cavendish Square, London, W., Monday, March 5, 1906.

The President, A. E. CUMBERBATCH, F.R.C.S., in the Chair.

(Continued from page 160.)

ANGEIOMA OF THE AURICLE (WITH PHOTOGRAPHS, MACROSCOPIC AND MICROSCOPIC SPECIMENS, AND PLASTER CASTS FROM A CASE).

BY HUGH E. JONES.

The patient was a boy, aged sixteen, with the following history. The left ear had always been larger than the right one and "birth-marked." Four years previous to coming under Mr. Hugh Jones's care there had been severe spontaneous hæmorrhage from the anterior surface for which a surgeon of Stafford had performed an operation, (the patient thought that some veins were tied). There had never been any pain, but the boy stated that there had been occasional discharge from the ear. During the last year or two the growth had been more rapid.

On admission to hospital the auricle was found to be enormously enlarged, measuring three inches from above downwards, two inches laterally, and two inches and a half from back to front. Several oval and round outgrowths projected from both surfaces. Large arteries and veins could be seen coursing under the skin. Hearing: Watch, R. 5 feet, L. 14 inches, Weber, positive to right; L. Rinne, positive. Bone conduction, full. Occasional tinnitus in left ear. The left meatus contained a quantity of epithelial scales, but no pus, and peroxide of hydrogen caused no effervescence. The membrana tympani was seen with difficulty and was opaque, but no details could be made out. Compression of the common carotid caused the growth to become distinctly paler.



To illustrate Mr. Huan E. Jones's Case of Angelioma of the Auricle.

The patient was shown at the meeting of the Otological Society held at Manchester in June, 1905. The following week Mr. Hugh E. Jones, after tying the external carotid artery, amputated the auricle. The operation was uneventful; there was a fair amount of bleeding, which was easily controlled by pressure until the newly divided vessels were picked up and tied. It was considered doubtful whether the ligation of the carotid had been really necessary and how far it affected the bleeding. The soft parts were drawn together so that a raw surface not larger than a penny was left to cicatrise. No secondary hæmorrhage occurred. Up to February, 1906, there had been no recurrence of the growth in the skin.

Mr. SECKER WALKER said that some time ago he had a case of angioma very similar to that shown by Mr. Jones. At Mr. Pridgin Teale's suggestion he tried at first transverse incisions round the growth, the idea being that they would result in sufficient cicatricial contraction to secure atrophy of the growth. Mr. Teale was present at the operation, but he (Mr. Walker) could not say that any atrophy resulted from what was done. Three or four weeks later he ligatured the external carotid, and immediately the growth became blanched and much smaller, and eventually shrivelled up. Recently he had seen the child again, and although the ear was fairly large and bluish and hung down more than the other, she was practically well. There had been no increased growth since the operation five years ago.

Dr. JOBSON HORNE said the Society had been very fortunate lately in having growths of the auricle brought under its notice. Recently a very interesting specimen had been referred to the Pathological Committee, and he suggested that perhaps it would be agreeable to Mr. Hugh Jones to allow the specimen from his case to be examined by that committee.

Dr. URBAN PRITCHARD seconded the suggestion.

The specimen was referred to the Pathological Committee.

SOME COMPLICATIONS OF SUPPURATIVE DISEASE OF THE MIDDLE EAR.

BY HUGH E. JONES.

The following four cases having many points in common, it was found convenient to state briefly the facts of each case and then to comment upon the series.

(1) *Septic thrombosis of the bulb of the jugular vein following the*

use of chromic acid and the performance of the complete post-aural operation.

The patient, a man aged twenty-one, had double suppurative otitis media of sixteen years' duration, and was admitted into the Liverpool Eye and Ear Infirmary on August 10. Both tympanic cavities were filled with granulations, growing chiefly from the floor and inner walls. Hearing: Watch—R. on pressure, L. 3 inches. Bone conduction, full both sides. No vertigo. Chronic acid was applied to granulations in both ears, and treatment with peroxide of hydrogen was carried out. Boracic acid lotion and glycerine and carbolic acid drops were prescribed preparatory to complete post-aural operation. The temperature varied between 97·8° and 99·8° F.

On August 18 the complete post-aural operation was performed on the right ear, with thorough curettage of the tympanum. On the same evening the temperature rose to 100·8° F. The packing was removed on the third day (20th), but the temperature continued to rise, reaching 104·8° on August 23, when large oscillations and rigors began. No cord was felt in the neck.

August 27.—The lateral sinus was incised, the blood was fluid, the sinus was plugged, and the internal jugular vein was tied and divided. The symptoms of septic thrombosis continued unabated until September 7, when the healed wound in the neck was reopened, the upper section of the vein brought out of the wound and opened, allowing a large quantity of pus to escape. The sinus and vein were washed out daily. From this date the temperature kept low, and an uninterrupted recovery took place. Hearing of right ear was not improved.

January 23, 1905.—The complete post-aural operation was performed on the left ear. Uncomplicated recovery with good result and hearing of watch at 5 inches.

(2) *Acute temporo-sphenoidal abscess, previously unsuspected, discovered during mastoid operation.*

The patient, a boy aged seventeen, had double suppurative otitis media of many years' duration. The writer had decided to perform the radical operation upon the right ear, which appeared to him to be the worst in every way. The day before the date fixed for the operation the patient's doctor sent to say that the operation would have to be postponed because he (the patient) was suffering from an attack of influenza, and acute inflammation of the other ear. It appeared to the writer that these were reasons, not for delay, but

for immediate operation on the left ear. After consultation with the doctor this course was taken. The only symptoms were severe pain in, and increased discharge from the left ear, and moderate fever. When the later stages of the operation had been reached the patient suddenly stopped breathing; as there was nothing to suggest an overdose of chloroform it seemed possible that the trouble was caused by an intra-cranial abscess, and as the tegmen was carious the operator decided to search in that direction. While artificial respiration was being performed the tegmen was rapidly removed, the dura opened, and a small cortical abscess (about two drachms in capacity) was found immediately over the antrum. Natural respiration was restored, and the remainder of the operation and convalescence were uneventful.

The right ear was operated upon (with a good result) a fortnight later. Hearing, eighteen months later, R. 3 inches, left 5 inches—occasionally 12 inches.

(3) *Septic thrombosis of the lateral and sigmoid sinuses and the internal jugular vein down to the level of the omo-hyoid muscle, and complicated by an acute temporo-sphenoidal abscess.*

The patient, a boy aged fourteen, was admitted into the Liverpool Eye and Ear Infirmary on November 1, 1904, in a semi-comatose condition. The history was vague—recurrent suppurative otitis media for about three years, with a recent sharp attack of three weeks' duration, stupor and occasional delirium for one week. On admission there was a distinct cord felt in the neck and slight optic neuritis. The internal jugular vein was at once tied and divided at the level of the omo-hyoid muscle. It was thought that the ligature was below the extreme end of the clot, but immediately after tying the knot the patient stopped breathing, became cyanosed, and had a rigor. He soon recovered his natural colour, but it was thought advisable to leave the remainder of the operation until later in the day. In the afternoon the common facial vein and other large branches were tied off and divided, and the jugular brought out of the wound; the complete mastoid operation was performed, the lateral and sigmoid sinuses were exposed and opened up, and the clot was removed. Following this operation the oscillations of temperature gradually lessened, although the temperature was several times over 103° F.; the pulse rate never exceeded 90 per minute, and the patient's mental condition was not satisfactory; it was therefore decided to explore the temporo-sphenoidal lobe, and this was done on November 11. The dura

over the antrum was partly necrosed, and a fair-sized abscess was readily opened in the brain substance above the necrosed area. Everything now seemed right until November 25, when rigors and oscillations of temperature began again. This was due to suppuration in the upper part of the lateral sinus. In order to deal effectively with this extension it was found necessary to remove bone over the sinus right up to and partly over the torcular herophili. The sinus wall was pushed in at this point to control the bleeding, and the clot was removed after slitting up the sinus in its whole length. The clot was found to be breaking down to within half an inch of the torcular. There were three rigors during the following four days, and then true convalescence was established.

The boy was shown at the Manchester meeting of the Society in June, 1905. When seen a week ago all the cicatrices, including the antro-tympanic walls, were perfectly sound, and the boy's general health excellent. The watch was heard at two inches.

(4) *Specimen from a case of infection of the bulb associated with a small temporo-sphenoidal abscess which had not been diagnosed during life.*

The particulars of this case are given on p. 84 of the "Catalogue of the Museum of the International Otological Congress, London, 1899" (Specimens No. 640 and 640 A), Horne and Cheatle. The patient was a boy, aged eight. The illness had commenced twelve days before admission to the Liverpool Eye and Ear Infirmary, under one of the writer's colleagues, with right-sided clonic convulsions. On admission, the symptoms were those of sinus pyæmia and so continued to the end. The sigmoid sinus was explored, but contained fluid blood and its walls looked healthy. The boy died on the fourteenth day after admission. At the necropsy *post-mortem* clot was found in the sinuses and what was apparently an *ante-mortem* clot in the bulb, the rest of the internal jugular vein being empty. Carious patches were found in the floor of the tympanum, and also in the tegmen. On removing the brain a small temporo-sphenoidal abscess burst.

The points of interest illustrated by the above cases were as follows:

(1) The causation of bulbar thrombosis in Case 1 by either the use of chromic acid or by curettage of the fundus tympani. The granulations grew from the floor of the tympanum and were probably in direct communication by means of small veins with

the bulb. If the chromic acid caused thrombosis of these venules and possibly of the bulb itself, the clot must have remained aseptic up to the time of the operation, nine days later. This is shown by the temperature chart. In spite of the preliminary antiseptic cleansing and similar precautions during the actual operation the temperature began to rise on the night of the operation and continued to rise for three days until the oscillations characteristic of septic thrombosis began. Mr. Hugh Jones thought that clotting of the small veins a few days before operation would act to some extent as a safeguard against infection of the bone surface exposed by operation, but it was evident that, in this case, it had failed to do so; he did not, however, think that the action of the chromic acid was a contributory cause of the complication which ensued, and it was quite possible that it had prevented a general pyæmia. It was a question whether the sinus and jugular vein should not have been occluded, in the manner recommended by J. H. Nicoll, of Glasgow, when the temporal bone is extensively diseased, as a preliminary to the mastoid operation.

(2) Fluidity of the blood in the sinuses with absence of a cord in the neck might cause hesitancy in dealing radically with a case (as it did in Case 4), but when the classical symptoms of sinus infection were present the above negative signs should be taken as pointing to thrombosis confined to the bulb or to the still more dangerous condition of septic mural clotting.

(3) Primary or secondary extension of infection might occur in the direction of the torcular and might cross the line to the opposite lateral sinus. In Case 3 the progress of the disease was only arrested at the margin of the torcular. It was formerly taught that infection of the opposite sinuses was practically impossible owing to the partial partitioning of the two halves of the torcular. The writer of this paper has reported two cases in which the infective process had crossed the middle line and caused death (one with a large abscess in the opposite occipital and temporal lobes), and he thought that a mild phlebitis had extended to the opposite internal jugular in two cases which recovered.

(4) The danger of cutting off a small portion of the end of a tapering clot, when tying the vein in the neck, was to be avoided only by allowing a very liberal margin for the tapering of the clot.

(5) When the vein has been tied and divided three courses were open to the operator, and one of these must be followed: (a) the distal end of the vein might be brought out of the wound in the neck and left open; (b) the main branches might be tied off

and divided and the whole vein in the neck excised; or (*c*) the sigmoid sinus, bulb, and jugular vein might be laid open in one long trench. The course of Case 1 before and after the end of the vein was opened and the whole track washed out from above respectively showed in a very marked way the great advantage of this procedure. The writer thought that courses *b* and *c* need rarely be followed. He had not yet met a case in which he thought either plan would have been of greater value than the simplest one, *a*, however much more scientific they might appear to be.

(6) The writer agreed with those who held that cases occurred in which it was not necessary to tie the vein at all, but would limit the plan of simply cleaning out the sinuses to the cases in which, the infection having commenced high up in the sigmoid or in the lateral sinus, it could be demonstrated that the clot in the lower part of the sigmoid was sound. (A successful case of this kind was then under the writer's care, but was not included in this series.)

(7) Cases 2 and 4 showed how easy it was to overlook, not only latent abscesses of the brain, but also small acute ones. In Case 2 the symptoms were merged in the painful tympanic and mastoid suppuration, and in Case 4 were entirely overshadowed by the classical symptoms of septic thrombosis. In Case 3 the abscess was suspected from the day of admission owing to the relatively slow pulse rate, continued delirium, and stupor.

(8) It had often been pointed out that cerebellar abscess was frequently associated with thrombosis of the lateral or sigmoid sinuses, and there was some danger of its being thought that the association was almost invariable. In the catalogue of the museum already referred to he had found seven cases of cerebellar abscess with sinus thrombosis, but there were also seven temporo-sphenoidal abscesses with thrombosis of those sinuses or (in one case) of the superior petrosal sinus. It was not to be assumed, therefore, in the absence of definite localising symptoms, that the abscess was certainly in the cerebellum because the sinuses were thrombosed.

Dr. DUNDAS GRANT said Mr. Hugh Jones's interesting collection of cases had given much to think about—more than there was time to deal with. With regard to thrombosis of the bulb of the jugular, he asked if members had employed a method which he (Dr. Grant) had found useful and which he described in connection with a case at the last meeting, namely, after the sinus was exposed to endeavour to get an impulse conveyed between a finger on the jugular vein and one on the exposed sinus. If such impulse could

not be felt, the inference was almost indisputable that there must be blocking between the two, either in the bulb or higher up. In Mr. Jones's case no plug was found higher up, and he assumed it was by a process of exclusion that he decided there was blockage in the bulb of the jugular. The method he described was one which, when negative, would not give much information, because there might be a parietal thrombosis. With regard to the washing out of the sigmoid sinus, from the vein or *vice versá*, he had always felt a good deal of diffidence. There seemed to be a danger of sending septic material up some of the collateral tributaries of the veins. In washing from below there was a chance that one might rupture a vein and flood the meninges. Washing from above was not so dangerous, but there was still great possibility of driving material up into the inferior petrosal sinus. He had tried introducing a tube up the jugular vein and exercising suction by means of a syringe. He could not say that up to the present he had been able to withdraw much with it, but it might be found useful. When temporo-sphenoidal abscess arose from sinus-phlebitis he thought there had probably been persistence of a well-marked petro-squamous sinus. Mr. Cheatle's observations with regard to this made it more easily understood than otherwise. He thought everyone accepted Dr. Pritchard's view, that in many cases of cerebral and cerebellar abscess the extension of the disease into the temporo-sphenoidal lobe or the cerebellum had been through the small veins. This, he thought, explained the frequency of the association between lateral sinus thrombosis and cerebellar abscess. This extension through the small veins was, he thought, favoured by ligaturing the jugular vein, a proceeding to be avoided unless strongly indicated, as in the cases in which one made sure that the bulb was involved. He asked whether members had tested his method, or any equivalent one, for judging of the permeability of the bulb of the jugular, and if not, whether they saw any objections to the method.

Dr. PRITCHARD said it struck him at the last meeting that it would be very useful to test the condition of the jugular by means which Dr. Grant had mentioned. With regard to washing through, one would not tie the jugular at the bottom and force fluid down; if that were done, septic material might be driven into the small vessels. But he did not believe there was any practical risk of that kind when syringing was done gently from top to bottom with the jugular vein open.

The PRESIDENT said that a point of great interest in connection

with the first case was the sepsis coming on after the application of chromic acid. He knew Macewen said that very often the granulations in the ear in connection with chronic suppuration were a protection, and that removal of these granulations very often opened up a road to direct sepsis. Chromic acid, being an escharotic, should destroy any germs which were there at the time of the application, and it could only be by opening up channels for fresh germs to get in after sloughing had taken place that sepsis could occur. Sometimes in out-patient practice, in cases of chronic suppuration, with a small amount of granulation-tissue, limited in extent, a modified operation could be performed, when there were no beds available, consisting in removing the ossicles, scraping the bone freely, applying chromic acid, and then plugging, thus endeavouring to effect a cure. If Macewen were right, patients were exposed to considerable risk when granulation-tissue was thus destroyed by caustics. He did not know whether there was any direct connection in this patient between the application of chromic acid and the subsequent sepsis.

Mr. HUGH JONES, in reply to a question from the President, said he mentioned there was an interval of nine days, in which there was no rise of temperature, after the application of the chromic acid, and that the rise of temperature occurred on the evening of the day of operation. He thought it was the operation and not the chromic acid which caused it.

Mr. HERBERT TILLEY said he thought Mr. Jones's explanation was probably correct—namely, that during the operation he had opened small lymphatic spaces, through which septic absorption occurred. In other instances of suppurating bony cavities—for example, in the maxillary antrum or frontal sinus—it was uncommon to find a temperature during the chronic suppurating condition, provided the pus was not retained under tension. If a suppurating antrum were freely opened there was nearly always an evening rise of temperature to 100° F. or 101° F., the next evening 100° F., the following 99° F., and after this it fell to the normal. It was so invariably present that after the operation one was not alarmed to see the temperature go up in the evening. Last year he opened a chronic maxillary empyema in a medical man, in whom the temperature persisted for ten days after the operation. Before such operations there was an intact surface which was sufficient to prevent absorption of septic material, and as a result of the operation one opened up hundreds of small lymphatic and vascular spaces in which small septic thrombi would form. He had little

doubt that that was what occurred in Mr. Jones's case. In the maxillary antrum one was working away from any region of vital importance, whereas in the ear the operator was in close contact with more vulnerable regions, absorption was more likely, and there was less likelihood of free drainage taking place.

Mr. HUGH JONES, in reply, said Dr. Grant had asked him why he thought the temporo-sphenoidal lobe was affected in Case 2 when the breathing stopped during the operation, that symptom being generally due to cerebellar abscess. The only reason he could give was that there had been no symptoms of brain abscess, the temporo-sphenoidal lobe was very much easier to get at than was the cerebellum, and that there was some caries of the tegmen. Consequently he thought he would begin there, and if he found an abscess in the temporo-sphenoidal lobe he would be content, but if he did not find it he would then explore the cerebellum. He had not had the courage to put the palpation method of diagnosis of thrombosis of the bulb into practice, and he did not know whether Dr. Grant regarded it as altogether free from danger. He would have thought there was a risk of loosening the clots, especially mural clots, and that they might be carried into the circulation. The temperature-chart of Case 1 showed the great danger of tying the internal jugular without opening it. If it were tied at all, it should be left open from the beginning. He had had no experience of exposing the bulb, and thought it was an operation that was rarely called for. He agreed with Dr. Pritchard that there was very little danger in washing through from top to bottom. He had not seen it produce any ill effects. It was certain that the veins leading off from the sinus and bulb were already thrombosed, and if one left septic material in contact with the ends of these veins there was surely greater danger of septic extension along the clots if the septic material were left *in situ* than if it were washed away. In reply to the President, the chromic acid was applied in the first case with the idea of preventing the very danger which Dr. Herbert Tilley mentioned. He had employed the method in several cases before doing a complete post aural, applying the chromic acid freely to the granulations with the idea of producing clotting in the small vessels in the neighbourhood, diminishing the amount of hæmorrhage at the time of the operation, and enabling one to get a fresh surface, in the vessels of which clotting had already taken place, thus lessening the liability to septic absorption. The position of the carious patch in that case seemed to account for the whole accident. The thrombosis

only occurred in the first ear operated upon. In doing the second ear no accident happened, although chromic acid had been applied to the granulations in that ear also.

Abstracts.

PHARYNX.

Dupuy, Homer.—*Acute Affections of the Pharyngeal Tonsil in Early Life.*
 "New Orleans Medical and Surgical Journal," March, 1906.

The conclusions to which this author comes are that head-colds in early life are generally characterised by an acute inflammation of the pharyngeal tonsil, the nasal phenomena being purely secondary; that profound systemic disturbances may follow acute adenoiditis; that the post-nasal tonsil acts as an avenue of infection for the cervical lymphatic glands; that treatment should be early and active; and that the child's nose and naso-pharynx should receive nearly the same attention bestowed upon its teeth.

Macleod Yearsley.

NOSE AND ACCESSORY SINUSES.

Forstelles, Arthur (Helsingfors).—*On the Resection of the Inferior Turbinal Bone.* "Monats. für Ohrenheilkunde," June, 1905.

The author considers that resection is by far the best method of dealing with hypertrophies of the inferior turbinal. The galvano-cautery, although it has its votaries, is open to many objections, and is by no means so satisfactory.

Various methods of removal by means of snares, cutting forceps, scissors, etc., are described. To overcome the difficulties and unsatisfactory results of these operations, the author has invented a special forceps which he claims will remove the entire turbinal with the soft parts covering it with a single grasp and turn of the hand. The forceps (made by Beus, 54, Alexanderstrasse, Helsingfors) are 18 cm. long, with straight blades $5\frac{1}{2}$ cm. from the lock to the tips. The points of the blades are slightly hollowed out so as to grasp a hypertrophy of the posterior end of the turbinal more securely. After cocainising the nostril, the blades are passed along the inferior and middle meatuses as near the base of the turbinal bone as possible. When the bone is thoroughly grasped with a single twist from left to right and one pull the entire turbinal is removed. Through the crushing of the vessels by the forceps, the bleeding is only nominal in amount. No adrenalin is used; a small piece of sterilised gauze is placed in the nostril for a few hours. After the first day the nostril is gently syringed daily, the patient being kept under observation for a week. The author has operated on 210 cases in the last four years and has had no evil after-effects.

Knowles Renshaw.

Pegler, L. Hemington.—*The Pathology, Affinities, and Treatment of so-called Bleeding Polypus (Discrete Angioma) of the Septum.*
 "Lancet," November 18 and 25, 1905.

Author's abstract.

Almost every form of nasal tumour, malignant or benign, is liable to

take origin from the septum. One that occurs fairly often is the so-called "bleeding polypus," which is important (1) because it is often an unsuspected source of recurring and profuse epistaxis, dangerous to health; (2) it is liable to be mistaken macro- and microscopically for a malignant neoplasm; (3) it bears an undoubted relationship to more bulky nasal growths, which in turn possess certain characters shared by malignant tumours; (4) it shows an obstinate tendency to recrudescence from its base of attachment unless very radically extirpated.

Nomenclature.—The designation "bleeding polypus of the septum" is adopted by the author for general use in this paper, because it has been accepted more or less universally since it was first introduced by Schade-waldt in 1893. A more technical one, conveying the important attributes of benignity, extreme vascularity, succinctness of growth, as well as varying site within the nose, would be that of "discrete nasal angioma." This is, correctly speaking, an abbreviation of "discrete granulomatous angioma," which term more fully indicates the pathological character of the majority of cases.

Etiology.—The etiology of bleeding polypus is unsettled. Krieg, Siebenmann, and Ribay are amongst the few writers who have addressed themselves seriously to the question. They trace the growth always to an inflammatory foundation, and consider it one of the terminations of an initial rhinitis sicca. Krieg states that in all his cases the tumour arose from a base formed by capillaries proliferating in consequence of inflammation. In the pathological section certain objections to this theory are dealt with. It presupposes a constant seat of growth in Kiesselbach's area of the triangular cartilage, whereas pathologically identical tumours are not uncommon on the alar wall of the vestibule in an otherwise healthy nose. The female sex has been thought to predispose towards its development.

Clinical features, naked-eye appearance.—A bright or dark red, ovoid or roundish body, from a pea to a small hazel-nut in size, lobulated or nearly smooth, more or less mobile or pedunculated, is seen occluding the vestibule, sometimes quite near the orifice. It is often flattened by pressure, and sloughy or ulcerated on the surface; it usually bleeds on the slightest touch.

The seat of election is Kiesselbach's spot on the triangular cartilage of the septum, corresponding to the distribution of Kiesselbach's artery, but it may be attached higher up by a longer pedicle. It seems to show some preference for the left side.

Symptoms.—The first that attracts the patient's attention is nose-bleeding, which occurs spontaneously or on the slightest provocation, and keeps him in a state of constant apprehension. Obstruction gradually supervenes, which often becomes complete.

The tumour develops slowly, but after removal, unless the base is chiselled away or cauterised, it soon reappears, exceeding its original dimensions in from two to three weeks. This is a regeneration of the young sprouting capillaries of the basal tissues, not a true recurrence by virtue of cellular infiltration, characteristic of malignancy.

The clinical diagnosis is not always easy, but is best arrived at by a process of negation; the precise variety cannot be decided until the specimen is examined microscopically. With an appearance such as already described, and a history of hæmorrhage, the diagnosis when close to the orifice of the nostril should not be difficult. Distinction has to be made from lupus, fibroma, papilloma, papilliform mucous hypertrophies, in-

flamed mucous polypi, and sarcoma. The latter rarely, or never, forms a small succinct and pedunculated growth; it is soft, fleshy, and often friable, and if a portion is removed the distal remnant bleeds violently and rapidly exceeds its former mass.

Treatment.—This is effected by the cold snare, slowly drawn up; the base must be energetically cauterised with a flat burner or extirpated with the chisel, and the nasal cavity firmly plugged with iodoform gauze. If recrudescence take place, it must be treated in the same manner. Two or three repetitions of this treatment may be necessary for complete extermination.

Subdivision of types.—Walliczek distinguishes three principal types of bleeding polypus of the septum. These are:

(1) The granuloma type, consisting partly or entirely of granulation-tissue.

(2) The fibromatous or connective-tissue type, in which may be distinguished a loose-textured œdematous fibro-angioma, a firmer, close-textured fibro-angioma, and a close-textured, soft-cell fibro-angioma.

(3) The cavernomatous or purely vascular type, in which the growth is made up of spongy angiomatous tissue. All these types may occur in combination, and the size of the vessels in the fibro-angiomas varies enormously.

Pathological relationship with other benign neoplasms.—The granuloma type is one of the best defined of the three, because some few examples of bleeding polypus are almost pure granulomas. It is the parent type, and as our knowledge of these tumours develops, and of granulation-tissue increases, we shall probably come to regard the other types as merely subsidiary to it.

The tissue met with in the granuloma type coincides in character with that met with in granulomata and granulation-tissue elsewhere in the body.

The endothelium is often spindle-shaped, and the cells that are given off from them—the endothelioid or intercapillary cells—then partake of the same character. A difficulty presents itself as to the correct interpretation of the layer of granulation-tissue that forms the circumferential zone of so many specimens, especially the loose-textured fibro-angiomas. This zone is usually most pronounced in those peripheral areas that are denuded of epithelium, and, in fact, show more or less signs of ulceration. Owing to the fact that no clear line of demarcation can be distinguished between this subplasmatic granulomatous zone and the fibro-angiomatous body of the growth, there is a natural inducement to consider this character as indicating the granulomatous type; nevertheless there are reasons for considering this zone as largely adventitious. The chief argument for this assumption is the fact that certain specimens exhibit clear evidence of the invasion of micro-organisms, which, passing through the intact epithelial border, excite inflammatory action in the tissues and cause to be thrown off an abundance of plasma, or exudate, with consequent destruction of the squamous epithelium. In favourable specimens, not only can this destruction and absorption of the epithelium by the polymorphonuclear leucocytes that pervade the exudate be seen in process, but the micrococci themselves are manifest in the body of the phagocytes.

The effect of this destruction and partial ulceration of the surface, which then has a sloughy appearance to the naked eye, is a proneness to violent and repeated hemorrhages, which constitutes the chief danger of these little tumours.

Certain naso-pharyngeal growths, which have clinically been often described as sarcoma, are constituted of tissue which is hardly distinguishable from that met with in the granulomatous type of bleeding polypus. They are large and bulky, give rise to frightful hæmorrhage during removal, and, being with great difficulty eradicated, rapidly recrudescence, but clinically they are non-malignant. A similar species of granulomatous angioma occurs as a tumour formation in the maxillary antrum. Many aural polypi are described by Brühl as angeio-fibromas, their great proneness to hæmorrhage being due to their dilated vessels.

The connective-tissue type of bleeding polypus is related in its looser fibrous and œdematous form to certain other nasal angiomatous growths, as, for instance, the fibro-angiomas of the inferior and middle turbinals described by Jurasz, Seifert and Kahn, Schwäger, and others. This type of bleeding polypus bears no kinship to the papillary fibromas of Hopmann or any other variety of mucous hypertrophy; both may occur coincidentally.

The firmer, close-texture variety of the connective-tissue type has many relationships. It has its counterpart in the large and diffuse angeio-fibromas that often extend from the nasal cavities into the antrum and the naso-pharynx.

The soft-cell form of the connective-tissue type, on the other hand, is one that, agreeing closely with the soft fibromas of the laryngeal structures and elsewhere, is often confused with sarcoma, especially the spindle- and oat-cell form. The diffuse nasal angioma in Roe's original table of cases was possibly related to this or the granuloma type of bleeding polypus. It was said to have become sarcomatous after two removals, but is more likely to have been a hæmangeo-sarcoma from the first. There are good examples of the soft-celled fibromatous angioma in the table appended to the full paper, in one of which a diagnosis of sarcoma was almost universally made on exhibition of the specimen and a truly radical operation recommended for its extirpation.

The cavernous or telangiectatic type of bleeding polypus comes nearest to the true nævi or angiomas of the skin, larynx, and elsewhere, but a careful examination into the recorded cases of what has been described so far as pulsating angioma of the nasal septum in this country is inimical to the belief that the latter have exhibited no true distinctive characters from one or other of the three types of bleeding polypus here described. Telangiectasis of the mucous membrane of the septum occurs in conjunction with a similar condition of the skin of the face and elsewhere, just as nævoid patches may take origin from the wall of the pharynx and the glottis, but such septal growths are not bleeding polypi. Dr. Brown Kelly and Professor Osler have together published the notes of five of these cases of multiple telangiectasis of the septum and skin. Verneuil's case of septal angioma quoted by Morell Mackenzie was probably a true angioma of this kind, but there is no pathological report. All the three types above described are represented in the angiomatous tumours of the larynx. A resemblance is sometimes indicated between the structure of the cavernous growths of the respiratory tract and cavernous angioma of the liver, but a more correct analogy is found in some angiomas of the skin.

Whether any of the bleeding polypus cases described can be certainly classed as lymphangioma seems doubtful; Krieg describes a lymphangioma of the septum, and others have distinguished a venous form.

The question of affinity with malignant growths.—From the clinical

point of view with two exceptions the author is not aware of bleeding polypus being compared macroscopically to sarcoma or other malignant growth; the responsibility of this association has always rested with the pathological report, yet in no case has the latter been supported by clinical facts. In one case that presented a suspicious appearance on objective examination the growth turned out to be a pure granuloma and was not truly angeiomatous. It had elevated the external wall of the nose and deflected the septum, but after a piece had been removed for examination it shrunk and disappeared.

Another case was described in the clinical report as resembling sarcoma, but any bleeding polypus having a sloughy patch on the surface is liable to be so regarded. In none of the cases in which the pathologist reported sarcomatous elements has there been the slightest evidence of clinical malignancy or true malignant recurrence by virtue of genuine infiltration of the basal tissues. But the author feels still further compelled to question the correctness of the pathological reports themselves when sarcomatous tissue has been described as occurring in a discrete angeiomatous septal tumour with an innocent clinical history, though the literature of the subject yields no lack of such examples. Baumgarten reported a case as partly myxoma, partly myxosarcoma, Polnaek a case of angeiosarcoma displaying large and small blood-spaces, the intermediate substance showing characteristic sarcoma formation. Dausac found in one specimen sarcoma telangiectodes and in another endothelial angeiosarcoma. Sendziak recorded a case to which on the strength of the pathological report alone he attached the ambiguous title of "angeioma cavernosum sarcomatodes." In the full paper this report is quoted verbatim because it has influenced subsequent writers after the lapse of a whole decade and given effect to Roth's remark, that "amongst published cases of bleeding polypus of the septum there are either malignant tumours or at least some suspected as such," also the statement by another writer, that "sarcoma constitutes one of the forms of bleeding polypus of the septum." Nevertheless a careful scrutiny of Sendziak's description points to the belief that his specimen tallied very well with an average case of bleeding polypus of the septum, the peculiar grouping and crowding of the endothelioid cells giving rise to the suspicion of sarcoma. Norval H. Pearce's case coincides extremely closely with Sendziak's, and yet Pearce, while recognising the difficulty of interpreting the peculiar phases of granulation-tissue as occurring in these little tumours, guards himself against the common error and states that his diagnosis was "neither sarcoma nor angeioma but telangiectoma."

One must not, however, criticise these opinions too harshly, for in cases nearer home a diagnosis of sarcoma, angeiosarcoma, and perivascular endothelioma or perithelioma have respectively been made. Even Roth, the most recent author upon the subject, considered that his case (reported in 1904) agreed most with what Paltauf designates angeiosarcoma, but it is questionable from the description whether Paltauf implies anything more by this term than an atypical and non-malignant angeioma; and it is well to bear in mind in this connection that the Germans employ certain terms, such as epithelioma and endothelioma, in a *quasi*-anatomical sense without attaching the pathological signification that we do. The author, however, is not in want of support in contesting the accuracy of these diagnoses of malignancy. Langerhans, in reporting upon Schadowaldt's cases, states that "the absence of all cells which might direct suspicion to sarcoma proves that it is a non-malignant

formation," and Walliczek writes that "in spite of the manifold combinations that occur between the three types, these tumours are always benign." Heymann says many of the pedunculated tumours of the septum, described as myxosarcoma, belong to the bleeding polypus group, and stand much nearer to granulation tumours than to true sarcoma.

The question of affinity to malignant growths viewed chiefly from the microscopical aspect.—The difficulty and the source of so much diversity of opinion is due to regarding too narrowly, and attaching too much pathological importance to, the cell-proliferation that is thrown off in an outward direction from the endothelium of the capillaries and small blood-channels in bleeding polypus. This multiplication of cells might be described as a harmless mimicry of the destructive process, to which succeeds rapid infiltration and metastasis in endothelioma. This latter is a genus of morbid growth, in a general way malignant, which is being gradually classified apart from the angeo-sarcomata with which they were formerly identified, and from certain carcinomata, from which they are sometimes distinguished with difficulty. They are now being subdivided again into peritheliomata and entheliomata, the term "entheliuma" having been recently introduced by Dr. Lazarus-Barlow, who is especially working out this branch of pathology. As the words imply, the distinction depends upon whether the cell-proliferation process is directed away from, or towards, the lumen of the lymph- or blood-vessel, thereby either creating a cell-mantle around the channel or blocking it up by cell-growth within. In very many cases the two processes are coincident, so that Dr. Lazarus-Barlow now labels a number of his endotheliomas as peri- and entheliuma, or, in accordance with a suggestion of the author, "perientheliuma." Although extra-vascular cell proliferation, giving rise to equivocal appearances, is a common feature in bleeding polypus, the converse, viz. intra-vascular proliferation, is much less easy to demonstrate.

Many large channels show a tendency to encroachment of their lumen by fibro-cellular ingrowths; and the capillaries, especially in the close-textured soft-cell angeo-fibromas, are rich in crowded and perhaps enlarged endothelial cells, but a true parallel with the choking up of the lumen, as seen in entheliuma, is wanting. It is necessary to look away from these limited and isolated areas, and take a more general view; one then sees an evident distinction between the cellulo-capillary clusters of a bleeding polypus and the cell-masses of sarcoma or endothelioma. The malignant proliferation in the latter causes a rapid extension of the confines of the tumour and true infiltration of its base. The cells themselves are palpably larger than the endothelioid cell, which, whether of endothelial parentage or otherwise, and whether oval or fusiform, retains the characters of the connective-tissue type, and can at worst be regarded as no more than an endothelial cell under changed conditions and entourage. It is also to be noted in the innocent cell clusters of bleeding polypus how differently the cells are disposed towards each other from those in the malignant growth. They are not placed in rows of five, six, or more abreast, flat-wise, arranged as in a mosaic, but heterogeneously—a strange order in disorder, so to speak, the density of the cluster being much enhanced by the interspersions of leucocytes. Furthermore, their large, darkly-stained nuclei are usually clearly differentiated from the cell-body, which in the endothelioid cell is not the case. These few points of contrast will be found of value whenever a difficulty arises in microscopical diagnosis.

General pathological considerations.—The pathology of bleeding poly-

pus of the septum has excited so much interest on account of its strange diversity of histological detail and its remarkable affinities to other morbid growths of great surgical importance. In this connection the question arises whether a pathological entity can be formulated under the title in common use, or does the term comprehend a congeries or group of little tumours not closely enough related morphologically? The answer has so far come to be almost universally settled in favour of the former proposition. Hasslauer, in his most important paper on "Benign Neoplasms of the Septum" (*Archiv für Laryngologie*, 1900), devotes a separate heading to bleeding polypus, enumerating in his table fifty-five cases, and the general total of recorded cases at the present time reaches at least between eighty and one hundred. The author's paper gives many examples of the lengthy designations adopted by different authors to indicate the predominance of angiomatic structure; nevertheless some writers continue to deny to bleeding polypus of the septum a special place in rhinology on the plea of its essentially granulomatous structure. How far this opinion is justified can only be decided by studying the cases that come under observation in their earliest stage. The genesis of bleeding polypus, as of other tumour formations, is involved in speculation, but a knowledge of granulation-tissue in its various forms is the principal key to the elucidation of this particular growth, and accordingly the angiomatic structure of its several types finds its analogue in one form or other of granulation-tissue in distant regions. Hence it may be true that in bleeding polypus we have no more than a remarkable development of granulation-tissue, varied histologically within limitations by unknown causes, but probably influenced, like certain neoplasms of the same locality, by the peculiar character of the septal mucosa or the adjoining muco-cutaneous lining from which it takes origin. Should this be correct, the complete absence of any history of local traumatism or irritation in so many cases and the healthy condition of the surrounding mucosa is somewhat difficult to reconcile with such a purely inflammatory origin. Another problem as yet unsolved, whatever be the exciting cause of the basal capillary proliferation, is concerned with the factor determining which form of angiomatic change is to characterise the vessels of the commencing outgrowth, spongy, cavernous, or fibro-angiomaticous, or whether it shall attain to maturity as a pure granuloma and nothing more. The significant fact remains, however, as the table shows, that, whether as a result of secondary bacterial invasion or other cause, a submarginal zone of granulation-tissue was discernible in ten or twelve out of fourteen angiomatic tumours.

The resemblance of certain granulation tissue tumours, microscopically, to small round-cell sarcoma is common knowledge, but with reference to bleeding polypus there need be no confusion on this head. Round-cell sarcoma of the septum is as characteristic in appearance under the microscope as the most typical example of the same disease elsewhere in the body, and though it does not form secondary metastatic deposits nor affect the glands, it shows an inveterate tendency to true and rapid local recurrence, which is never the case with bleeding polypus of the septum.

Analysis of the table.—Of the 16 cases 9 were females and 7 males; the oldest was seventy, the youngest seventeen. In the 13 cases in which a history was recorded epistaxis was a more or less urgent symptom. In only 2 was there a history of traumatism, and in 1 of these the injury, if any, was due to pugilism. In 11 cases the growth appeared on the left side, in 4 on the right, in 1 not stated. Three arose from the floor

or alar wall of the vestibule, the remainder on the septum, about 10 of these being in Kiesselbach's area. In 1 only was there external deformity, viz. in a rather large granuloma. The largest number of recurrences was 3; cure resulted in every case.

Pathologically 2 were granulomata, more or less purely. Three were soft-cell fibro-angiomas of close texture, 2 were large-channelled fibro-angiomas, 1 was a spongy small-channelled angioma. Three were loose-textured fibroangiomas, 1 a large-channelled loose-textured fibro-angioma, 1 a small-channelled variety of cavernous fibro-angioma; 3 were granulomatous fibro-angiomas, 1 being loose- and 2 close-textured, and a granulomatous submarginal zone was to be found in 12 out of the 14 fibro-angiomas.

Menzel, K. M. (Vienna).—*The Symptoms of Empyema of the Maxillary Antrum.* "Monats. für Ohrenheilkunde," June, 1905.

The author draws attention to the periodicity of the symptoms of purulent inflammation of the antrum. The headache generally appears between 9 and 11 a.m., and remains until between 2 and 4 p.m. The evening and night are usually free from pain. The amount of pus discharged varies in the same way as the headache, being much greater during the morning hours. When, as often occurs in chronic empyema of the antrum of Highmore, the pus is fœtid, the odour is strongest during the period of freest discharge. The author gives details of typical cases. He is of opinion that there is an increased inflammation of the mucous membrane during the morning hours, and in consequence there is pain due to pressure and an increased discharge. *Knowles Renshaw.*

Foster, E. E.—*Description of Killian's Frontal Sinus Operation.* "Boston Med. and Surg. Journ.," January 25, 1906.

The author tabulates external ways of reaching frontal sinus. The essentials of a good operation should be: (1) A free exposure of the sinus for examination and removal of diseased areas; (2) the removal of the anterior ethmoid cells, as they are nearly always associatedly diseased; (3) the provision of a large opening for drainage, preferably into the nasal cavity; (4) freedom from danger, production of minimum disfigurement, and short after-treatment. Killian's operation alone covers these essentials with sufficient completeness. Foster does not think, however, that Killian's operation is thoroughly understood. He gives its indications and carefully and fully describes it. *Macleod Yearsley.*

LARYNX.

King, Gordon.—*A Lymphoid Tumour of the Larynx removed by Partial Laryngectomy.* "New Orleans Med. and Surg. Journ.," January, 1906.

Male, aged sixty-five. A succession of colds for two years had left him with hoarseness and dyspnoea. A low tracheotomy under cocaine was followed ten days later by partial laryngectomy. Tumour proved, on microscopical examination, to be of lymphoid structure.

Macleod Yearsley.

Green, D. Crosby.—*A Study of the Larynx in Tabes.* "Boston Med. and Surg. Journ.," January 25, 1906.

The author reports on sixty cases with reference to—(1) the pro-

portionate number affected with paralytic and other disturbances of the larynx, (2) the nature of such disturbances, and (3) the period of their occurrence in the course of the disease. Out of the sixty cases, nine, or 15 per cent., presented undoubted laryngeal complications. In six (10 per cent.) there was paralysis of one or both cords. Seven (12 per cent.) had laryngeal crises. These crises occurred among the earliest symptoms, and two of them led to the detection of the tabes. Both these cases are described in full.

MacLeod Yearsley.

ŒSOPHAGUS.

Neumayer, H.—*The use of the Œsophagoscope in Diagnosis and Treatment of Foreign Bodies in the Œsophagus.* "Monats. für Ohrenheilkunde," July, 1905.

The author gives a carefully detailed account of twenty-four cases of foreign body in the œsophagus which have occurred in his practice during eight years.

In treating them, he first, by a thorough examination of the neck, chest, pharynx, and larynx, endeavours to locate the foreign body; if it is of metal or bone, X rays are used; in many cases, however, the shadow made by the vertebral column prevents a definite result by this method. For the introduction of the œsophagoscope in adults, local anæsthesia of the pharynx, obtained by painting or spraying with a 10 per cent. solution of cocaine, is generally found to be sufficient; in children a general anæsthetic is necessary.

The patient lies on his back with his head hanging over the edge of the table, and supported by an assistant. For adults the Mikulicz-Hacker tube is used, for children Killian's tube for bronchoscopy; a soft bougie may be used as a pilot. Any mucus or vomit which may obstruct the view is removed by wool swabs, or by tilting the table on which the patient lies so that the fluid flows out through the tube.

The patients were of all ages from sixteen months up to seventy years. Of the twenty-four cases, the foreign body was definitely located in twenty-one. In all the other three it had passed into the stomach either before the examination or during the vomiting movements caused by the introduction of the tube. Of the twenty-one cases in which the foreign body was located, extraction by means of the œsophagoscope was successful in nineteen. In several cases the foreign body was too large to be removed through the tube; when, therefore, it had been firmly seized with forceps, the tube and foreign body were withdrawn together. In two cases only could the impacted foreign substance not be removed: (1) A man, aged twenty-five, with a large piece of bone impacted opposite the cricoid cartilage; owing to the extreme swelling of the walls of the œsophagus it could not be dislodged. Œsophagotomy was performed and the mass removed with some difficulty. Five days later the man died of secondary hæmorrhage. (2) A man, aged twenty-eight, swallowed a tooth-plate during sleep, and was seen by the author three days later after some effort had been made to push the plate into the stomach. Patient's temperature was 103° F. The plate was seen imbedded in the œsophageal wall, surrounded by intense inflammation. An attempt at removal was unsuccessful. Œsophagotomy was performed, and the plate extracted. The patient died in twenty-four hours. At the autopsy septic pericarditis was found, and the entire mediastinum was infiltrated with pus.

The author finds it much more difficult to deal with foreign bodies

lodged at the level of the cricoid cartilage than when lower down, as in the former position the presence of the tube invariably caused reflex movements, which are absent when this region has been passed. No bad after-effects were seen in any case from the use of the œsophagoscope, and unless the wall of the œsophagus had been damaged the patient was able to swallow solid food immediately after the removal of the foreign body. Œsophagoscopy is, therefore, not only the safest method that exists for diagnosing the presence of foreign bodies in the œsophagus, but also, under the guidance of the œsophagoscope, in by far the majority of cases a satisfactory removal of the foreign body may be secured.

Knowles Renshaw.

EAR.

Hammond, P.—*Brain Abscess, Operation, Recovery.* "Boston Med. and Surg. Journ.," January 25, 1906.

Male, aged forty. A straightforward case of temporo-sphenoidal abscess of otitic origin. Operation was carried out through the ear, and the abscess was drained by means of gauze by that route.

Macleod Yearsley.

Crockett, E. A.—*A Case of Acute Meningitis, Operation, Recovery.* "Boston Med. and Surg. Journ.," January 25, 1906.

Female, age not stated. Right discharge from childhood. Nine months previous to consultation severe head pain, with mastoid tenderness. Second attack three months later, with nausea, vomiting, and vertigo. Nine weeks before consultation pain in ear and paracentesis attempted. Two days before admission severe headache and loss of consciousness, lasting twenty minutes. On admission she was semi-comatose, with nausea, vomiting, and severe occipital, frontal, and right parietal headache. Temperature 102° F. Double optic neuritis. Foul pus coming from right ear, which contained a large polypus. Operation was at once undertaken. Communication between middle ear and middle fossa was found, and on opening the dura mater pus could be seen on the vessels on the brain surface. Nothing was found on probing the brain. The cranial cavity was drained through the ear with gauze, and the patient made a rapid and uneventful recovery.

Macleod Yearsley.

Hitz, H. B. (Milwaukee).—*Double Mastoiditis complicated by an Intercommunicating suboccipital Abscess.* "Arch. of Otol.," vol. xxxiv, No. 6.

Acute otitis in one ear called for the Schwartze operation, and pus disappeared, except from one spot on the floor of the tympanum. Stiffness of the neck appeared, and deep pressure caused the pus in the tympanum to well up. A suboccipital abscess of the Bezold variety was discovered and opened. During manipulation in the suboccipital region a discharge appeared in the opposite ear, and the abscess was found to communicate with both ears, the onset of the inflammation in the second ear having occurred without any of the classical symptoms.

Dundas Grant.

THERAPEUTIC PREPARATIONS.

BURROUGHS WELLCOME & Co., London, Sydney, and Cape Town.

"Tabloid" "Xaxa" gr. 5 (0.324 gm.). "Xaxa" is a trade-mark name to designate acetyl-salicylic acid, issued by Burroughs Wellcome & Co.

Acetyl-salicylic acid appears to possess all the valuable therapeutic properties of salicylic acid and its salts, without unpleasant after-effects. Acetyl-salicylic acid is insoluble in the stomach, but readily soluble in the intestine, and therefore causes no gastric irritation. It may be used in any conditions in which salicylic acid or sodium salicylate is usually employed.

It has been found to be of great service in gout and rheumatism, especially in connection with the ear affections associated with these conditions. It is also of value in some forms of headache and neuralgia. It has been administered with success in chorea, pleurisy, glycosuria, eye diseases, and for pains of *tabes dorsalis* and disseminated sclerosis. It has also been given for the relief of pain following abdominal operations, and may be employed generally as an analgesic. Acetyl-salicylic acid, presented as "Tabloid" "Xaxa," readily disintegrates, and its therapeutic effect is promptly manifested. "Xaxa" contains no free salicylic acid.

One to three "Tabloid" "Xaxa" may be directed to be swallowed with water, plain or acidulated, twice or thrice daily, after food. For the relief of pain 15 grains may be prescribed as a first dose, with further doses, if necessary, of 10 grains at intervals of one hour to one hour and a half, until three or four doses in all have been taken.

"Tabloid" "Sodium Citrate" gr. 2 (0.13 gm.). Difficulties associated with the digestion of artificially prepared foods by infants frequently come under the notice of the medical practitioner. The necessary modification of cow's milk by dilution and sweetening to approximate human milk, is often inefficiently carried out by the mother or nurse. Consequently the infant may develop gastro-intestinal symptoms as a result of its inability to digest the food administered. The digestibility of cow's milk is greatly assisted by the addition of "Sodium Citrate." The explanation of the action which is commonly given is that the acid caseinogen and the calcium salts of milk in presence of the gastric juice form a thick casein clot. If "Sodium Citrate" be added to the milk, it combines with the caseinogen to form a sodium compound, less dense and more absorbable than the calcium caseinogen compound in the normal milk-clot. The calcium salts in the milk unite with the citric acid of the sodium citrate, and the resultant calcium citrate is diluted by the stomach contents and absorbed. Thus the introduction of sodium citrate increases the digestibility of cow's milk in a remarkable manner, allows the absorption of the calcium salts, and greatly enhances the food value of the milk. This method of treating milk is employed in all cases where there is reason to believe that the nourishment of the infant is unsatisfactory, and is of great value in cases of poor patients who cannot carry out more complicated instructions regarding the modification of cow's milk. It is indicated when the mother's milk does not suit the child, and also in the process of weaning. It is used to enable the amount of milk given in twenty-four hours to be increased. It is valuable in arresting or avoiding milk dyspepsia, and the rickety condition seen in many hand-fed children. The cheapness of this method of milk modification is a feature to be emphasised. It is directed that 1 to 2 grains or more of sodium citrate be given in each ounce of milk. One "Tabloid" product should be dissolved in about one drachm of water, and added as required to the milk. The product should not be added directly to the milk.



Barraud.]

The late W. R. H. STEWART, F.R.C.S.Ed.

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OBITUARY.

WILLIAM ROBERT HENRY STEWART, F.R.C.S. EDIN.

It will be a source of real sorrow to a very large number of the readers of this JOURNAL to learn that Mr. W. R. H. Stewart has passed away. For some two or three years he had been in bad health, and had spent a good many of his leisure hours at his home in Kent, and consequently had not been seen so frequently at the meetings of the various medical societies. The abdominal pains from which he suffered became during the past few months increasingly severe; duodenal ulcer was diagnosed, and it was decided to perform gastro-jejunostomy after a period of rest and dieting. The operation was successfully accomplished, but the patient died from exhaustion in the early hours of the following morning, March 7th.

Mr. Stewart was the son of the late Mr. W. E. Stewart, F.R.C.S., of Harley Street, and was born fifty-four years ago. He studied at University College Hospital, qualifying in 1874, and taking the F.R.C.S. at Edinburgh in 1878. Partly owing to ill-health, he spent some of his earlier years cruising on the steam-yachts *Ceylon* and the *Tyburnia* as medical officer.

In the early days of laryngology he was one of the pioneers of the specialty in this country, and worked with Sir Morell Mackenzie

both at Golden Square and in private practice. He became surgeon to the Golden Square Hospital, and worked there until, in conjunction with some of his colleagues, he helped to found the London Throat Hospital in the year 1887. Here he spent many years of active work, retiring to the post of consulting surgeon in 1898. He became surgeon to the throat and ear department of the North-West London Hospital, and later was appointed aurist to the Great Northern Central Hospital, adding the work of the laryngeal to the aural department there in the year 1894. He continued the active duties of this post until his death.

At its foundation, in 1893, Mr. Stewart was an energetic member of the Laryngological Society of London, and was elected Honorary Secretary in the second year of its existence; later he was elected Vice-President, and in 1902 Treasurer of the Society, and to his exertions in that post much of the success of the Garcia Centenary Celebration is due; he gladly gave up much of his time to correspondence connected with the festival, but unfortunately ill-health made it impossible for him to be present on the actual day.

Mr. Stewart will long be remembered by the profession at large as one of the most respected of the pioneers of laryngology in this country, but to his colleagues and other intimate friends his memory will always be endeared by a singular personal charm. Those who saw him but once or twice, and in recent years, may possibly remember him as a quiet, reserved man, with a dignified but always friendly face; but those who knew him well found in him a most staunch and affectionate friend, constantly thinking of the welfare and interests of others before his own, and saw in him an able surgeon who proved himself day by day a pattern of loyalty to his patients and to the profession.

He made a considerable number of contributions to the literature of the specialty, and particularly to that of otology, although in late years his interest was more especially directed towards the study of rhinology. Among these contributions may be mentioned:

A small book on "Otorrhœa and its Complications," which went into two editions.

"Epitome of Diseases and Injuries of the Ear."

"Boxing the Ear and its Consequences."

"Adenoid Growths in the Naso-pharynx."

"Intra-tympanic Syringe, Aspirator, and Douche."

"Some Points in the Treatment of Chronic Middle-Ear Suppuration, with special reference to the Abuse of Syringing."

"Aids to Otology," two editions.

Joint author with Dr. McNaughton Jones of the "Practitioner's Handbook of Diseases of the Ear and Naso-Pharynx," which has recently gone into its sixth edition, with the collaboration of other authorities.

In 1887 he contributed to the *Lancet* "A Case of Thyrotomy for Epithelioma of the Larynx."

"Case of Suppuration of Posterior Ethmoidal Cells," *Lancet*, 1893.

"Case of Suppurative Meningitis following Mastoid Disease; Operation; Cure," *Lancet*, 1894.

Since the last date he had made a number of interesting contributions through the medium of the Laryngological Society's *Transactions*.

The very characteristic portrait which we reproduce was taken some ten years ago by Messrs. Barrauds, Limited.

NOTES ON THE PATHOLOGY OF FIFTY CASES OF INNOCENT LARYNGEAL GROWTHS.

BY WYATT WINGRAVE, M.D.,

Pathologist to the Central London Throat and Ear Hospital.

At the Annual Meeting of the British Medical Association, held at Oxford in 1904, a discussion upon innocent laryngeal growths was opened by Dr. Dundas Grant, who kindly referred to about thirty cases which I had collected but not published.

These cases, supplemented by recent additions, form the substance of this contribution. They are selected from the writer's preparations at the Central London Throat and Ear Hospital and private sources. They include only small, intrinsic, papillomatous or pedunculated growths, large tumours, singers' nodes, pachydermal corrugation, granulomata, and other excrescences either belonging to a specific disease or of extrinsic origin are excluded.

Much confusion prevails in the nomenclature of these growths, since their macroscopic characters do not always agree with their histological structures; for many are often described clinically as papillomata which are not in the least "warty" in structure.

It will be convenient to classify them morphologically under two types: (1) epithelial (papillomata); (2) mesoblastic or connective-tissue growth. The first group is essentially epithelial in structure and origin, while the second consists of growths composed of elements varying only in degree from the original vascularised areolar tissue from which they grow, covered with the normal or modified epithelium of the region, and ought not to be described as papillomata.

(1) *Papillomata*.—Laryngeal papillomata are similar in structure to ordinary epidermal warts with the exception that, perhaps

owing to their special surroundings and their hypoblastic origin, they rarely undergo keratin or horny changes as do skin warts. Each possesses a "core" of vascularised areolar or connective tissue of varying amount, arranged as irregularly branching fimbriae, covered by densely packed, stratified, squamous epithelium, similar in type to the Malpighian cells of the epidermis. This epithelial covering dips between the fimbriae, forming interdigital masses or columns which in transverse section often appear as "pearls" or "nests," consisting of concentrically packed squames. Such "nests" must not be confused with the transversely cut papillae which have the vascular core in the centre bounded by the deepest layer of columnar cells, the epithelial arrangement being thus reversed. Their resemblance to epidermal cells is still further shown by the spheroidal cells possessing "prickles." Irregular mitotic changes in the nuclei are absent, a feature which, in conjunction with their regularity in size, shape, grouping, and nuclei, excludes any question of malignancy.

The *core* consists of areolar tissue characterised by delicate white connective-tissue fibres, with a few epithelioid and wandering cells imbedded in a homogeneous mucin-holding matrix supporting blood and lymph channels. Occasionally multinucleated leucocytes, lymphocytes, and even plasmacytes are numerous, indicative of an irritative or slightly inflammatory process.

While papillomata may grow from any part of the laryngeal mucous membrane, the specimens of this group were far more frequently found in the anterior half of the glottis.

Growths in the posterior commissure are more frequently associated with granulomatous changes, or form the characteristic corrugated projections of "pachydermia laryngis."

While most of the specimens were removed from the cords, several were found five or six millimetres below them; in one case they formed a large cluster on the epiglottic cushion.

(2) *Connective-tissue or mesoblastic.*—This group consists of small pedunculated tumours composed of more or less vascular areolar tissue covered with a relatively thin capsule of stratified epithelium, smooth or corrugated. In accordance with their physical appearance and their predominant histological details they may be called fibromata, fibro-papillomata, fibro-angiomas, angiomas, myxomas, myxœdematous fibromata, polypi, etc., histologically embracing a somewhat large range; still, the differences are more apparent than real, and more in degree than in kind.

In them the white or gelatin fibres predominate, the yellow or elastic being only present when the cords themselves were deeply involved by the growth. These fibres form a reticulum or network supporting cells and blood-vessels imbedded in a more or less mucin-yielding matrix. In four instances groups of small mononucleated lymphocytes, mingled with epithelioid and plasma cells, indicated a slight inflammatory process, while in eleven cases the blood-vessels were so numerous, so large and dilated, as to justify the terms respectively "angioma," "angio-fibroma," and "angio-myxoma." In eight the matrix was marked in proportion to the cells and fibres, suggesting the term "myxœdematous fibroma."

It may be remarked that plasma cells or plasmacytes are cells which occur in normal areolar tissue; they select pyronin in Pappenheim's stain, and have received considerable attention lately by histologists in connection with inflammations of the conjunctiva, but opinions are at present somewhat divided as to their significance.

Glands are rarely found in growths on the cords proper, but they are by no means uncommon in tumours from every other region of the larynx.

In addition to these general characters there are a few special features in this group which, not alone from their frequent occurrence, but also from the accentuation which they have received in the histological reports of growths removed from illustrious patients, are of pathological interest. They are (1) pigmentation; (2) thrombosis; (3) blood-extravasation; and (4) myxœdematous changes.

The blood-vessels being generally very thin, extravasation is therefore not unlikely to happen in an organ so exposed to friction and sudden shocks in coughing and over-use. Pigmentation is obviously the result of imperfect absorption of the blood effused, and not due to deposit of inspired carbon particles as occurs in the lung and peri-bronchial glands.

Clotting is shown in two ways, endo- and extra-vascular, both the red and the white varieties being represented. The white clot occurs as a laminated thrombus, mostly endo-vascular. It stains with difficulty, is devoid of erythrocytes, and shows signs of organisation in features which are well marked in five cases, two of which were kindly furnished me by Professor O. Chiari, and described by him as laryngeal polypi.

The characters of these highly vascular growths are strongly suggestive of hæmorrhoids, since there is not only attenuation of the walls of the veins, but an overgrowth of the vessels themselves.

Myxœdematous changes were well marked in eight cases, varying in degree with their size and pedunculation. Their pendulous or polypoid character is probably due in a great measure to myxœdema, a degenerative change induced in part by mechanical causes—chronic hyperæmia, thrombosis, etc., interfering with blood- and lymph-flow, and partly owing to the hygroscopic quality of the mucinogen of the matrix, which is converted into mucin by the absorption of water.

Pathogeny.—With regard to the probable origin of these papillated and pendulous innocent growths it is only reasonable to infer that many of them are associated with primary inflammatory conditions, focal and diffused, since hyperæmia, if sufficiently prolonged or repeated, may result in the histological dystrophic changes described, however imperfectly the microscope may show the actual transitions. A consideration of their pathogeny would, however, be incomplete without reference to local developmental processes. This has a special significance in connection with those growths found in the region of the anterior commissure. At an early stage of the development of the glottis the vocal cords are continuous anteriorly in the form of a web or sickle-shaped band, which normally undergoes suppression, but, in some instances, persists even to adult life. Should the modelling of this commissural web be imperfect, tags of tissue may be left, which might eventually constitute pendulous growths, especially should the subjects become mouth-breathers. Such a view is not only supported by the histological homology of the growths so often found in this region, but also by clinical evidence afforded by patients the subjects of this malformation under my own observation.

In the case of pure papillomata or warts irritation is an accepted factor in their pathogeny, and no situation is more favourable to that influence than the larynx, especially in habitual mouth-breathers, for laryngeal papillomata have been reported not only as co-existing with adenoids, but also as having spontaneously disappeared after removal of the post-nasal obstruction. That they do not always behave in this way is within the experience of most of us, and is further emphasised by Case 4, a patient, aged twenty-two, under the care of Dr. Dundas Grant, and who had worn a tracheotomy tube for six years. She had a large crop of papillomata on and below the cords, completely blocking the glottis. They were thoroughly removed, the tube discarded, and they have not returned. The view that apart from any bacterial influence they are locally infectious receives some support in laryngo-

logical experience. It has also been maintained that a personal predisposition to warts is suggestive of a papillomatous dyscrasia, especially during childhood; yet the age incidence in these 50 cases does not show a striking restriction to children, 5 occurring under ten, 3 between ten and twenty, 9 between twenty and thirty, 8 between thirty and forty, 5 between forty and fifty, while 2 occurred after fifty years of age.

As to situation, 27 grew on the vocal cords (equally divided between right and left), 7 were subglottic, 3 were at the anterior commissure, and 1 each on the aryepiglottic fold, the cushion of the epiglottis, and the pharyngeal aspect of the interarytenoid fold respectively.

In those cases in which the sex was noted 17 were males and 21 were females.

ABSTRACT OF 50 CASES OF PAPILLOMATOUS AND POLYPOID INNOCENT GROWTHS OF THE LARYNX.¹

Papillomata 21, fibromata (pedunculosis) 18, angioma (pure and mixed) 11.

PAPILLOMATA.—1. *Squamous papilloma*.—H. P. R., 33 B. Tickell. Surface epithelium vacuolated; core scanty.

2. *Squamous papilloma*.—H. P. R., 58 B, 42177 (O. P.). Dr. Dundas Grant. Right vocal cord; core scanty.

3. *Squamous papilloma*.—H. P. R., 71 B, 69628 (O. P.). Mr. Chichele Nourse. Female, aged twenty-eight. Core scanty.

4. *Squamous papilloma*.—H. P. R., 81 B, 82338 (O. P.). Dr. Dundas Grant. Female, aged twenty-two. Duration since infancy; wore tracheotomy tube. Site: subglottic in anterior commissure; very numerous; core highly vascular.

5. *Squamous papilloma*.—H. P. R., 79 B, Dolcini male, aged thirty. Dr. Dundas Grant. Site: subglottic; core scanty.

6. *Squamous papilloma*.—H. P. R., 78 B, 25645 (O. P.). Male, aged twenty-five. Dr. Percy Jakins. Site: subglottic; removed by laryngotomy; epithelium thickened, polymorphous; some mucous glands and scanty leucocyte infiltration.

7. *Squamous papilloma*.—H. P. R., 75 B, 42177 (O. P.). Dr. Dundas Grant. Site: right vocal cord; core scanty.

8. *Squamous papilloma*.—H. P. R., 88 B, 75645. Male, aged thirty-five. Dr. Percy Jakins. Removed by laryngotomy; leucocytic infiltration in core; epithelium very thick.

9. *Squamous papilloma*.—22171. Dr. Dundas Grant. Site: right vocal cord; epithelium thickened; core infiltrated by leucocytes.

10. *Squamous papilloma*.—14130 (O. P.). Male, aged thirty-eight, costermonger, alcoholic. Dr. P. H. Abercrombie. Multiple growths from cushion of epiglottis; very vascular.

11. *Squamous papilloma*.—22321 (O. P.). Male, aged thirty-four. Dr. Dundas

¹ H. P. R. refers to Hospital Pathological Register.

Grant. Site: vocal cords; multiple; core scanty; epithelium much thickened and deeply corrugated.

12. *Squamous papilloma*.—14070 (O. P.). Female, aged forty-six. Dr. Dundas Grant. Site: right vocal cord; core scanty.

13. *Squamous papilloma*.—Private case. Male, aged thirty-six. Epithelium deeply corrugated; no myxœdema.

14. *Squamous papilloma*.—H. P. R., 98. Female, aged twenty-four. Dr. Andrew Wylie. Site: left vocal cord; duration, 4 years; core fibrous; marked fimbriation; removed by Whistler's snare.

15. *Squamous papilloma*.—22171. Female, aged seven. Mr. Chichêle Nourse. Site: right vocal cord; core scanty.

16. *Squamous papilloma*.—22294 (O. P.). Female, aged thirty-six. Mr. Chichele Nourse. Site: right vocal cord; core fibro-elastic; deeply corrugated epithelium; "prickle"-cells well marked.

17. *Squamous papilloma*.—Case sent by Dr. Porter, of Wood Green. Girl, aged eight. Site: anterior commissure; multiple growth; core very vascular; duration since infancy.

18. *Squamous papilloma*.—H. P. R. 89, 26433. Dr. Dundas Grant.

19. *Squamous papilloma*.—Private case. W. W., male, aged forty-eight. Symptoms all his life? Site: epiglottis; horny "pearls"; deep, fimbriations; core scanty.

20. *Squamous papilloma*.—Private case. Female, aged twenty-five. Site: left vocal cord.

21. *Squamous papilloma*.—F. D., female, aged thirty-eight, 981. Dr. A. Wylie. Right vocal cord; core scanty.

22. *Pedunculated fibroma*.—H. P. R., 87 B, 3071. Female, aged twenty-two. Dr. P. H. Abercrombie. Site: left vocal cord; epithelium thickened and corrugated; core fibro-vascular, pigmented; vessels dilated; leucocyte infiltration.

23. *Pedunculated fibroma*.—H. P. R., 65 B. Dr. Dundas Grant. Site: vocal cord.

24. *Pedunculated fibroma*.—H. P. R., 62 B, 51107 (O. P.). Dr. Dundas Grant. Epithelium thickened; core very vascular; extravasation of blood.

25. *Pedunculated fibroma*.—H. P. R., 82 B. Female, aged twenty-eight. Dr. Dundas Grant. Site: left vocal cord.

26. *Pedunculated fibroma*.—H. P. R., 74 B, 53555 (O. P.). Site: right vocal cord; core vascular.

27. *Pedunculated fibroma*.—H. P. R., 36 B. Mr. Lennox Browne. Site: subglottic; lowly vascular.

28. *Pedunculated fibroma*.—H. P. R., 9 B, female.

29. *Pedunculated fibroma*.—H. P. R., 89 B. 47023, female, aged seven. Site: anterior commissure, multiple.

30. *Pedunculated fibroma*.—H. P. R., 93 B. 13372, male, aged fifty-one. Dr. Dundas Grant. Site: right vocal cord; endothelial activity.

31. *Pedunculated fibroma*.—Female, aged twenty-seven. Site: posterior commissure; glands; dense fibrous tissue.

32. *Pedunculated fibroma*.—7530, female (M. W.). Dr. Dundas Grant. Site: anterior third vocal cord; duration twenty-one months.

33. *Pedunculated fibroma*.—38900, male, aged thirty-five. Site: right vocal cord. Shown at British Laryngological, Rhinological, and Otological Association, 1898. Myxœdematous.

34. *Pedunculated fibroma*.—Private case, female, aged twenty. Dr. P. H. Abercrombie. Site: right vocal cord.

35. *Pedunculated fibroma*.—26037, male, aged thirty-three. Mr. Chichele Nourse. Core myxœdematous. Site: left vocal cord.

36. *Pedunculated fibroma*.—P. R. 870. Male, aged eleven. Dr. Andrew Wylie. Epithelium thickened; fibroblasts; lowly vascular.

37. *Pedunculated fibroma*.—P. C., female, aged twelve. Site: anterior commissure; epithelium thickened; epithelioid activity in core.

38. *Pedunculated fibroma*.—80101, male, aged five. Site: aryepiglottic fold; hyaloid fibres; very few cells; epithelium corrugated.

39. *Pedunculated fibroma*.—Male, aged fifty-three. Left vocal cord. Mr. Chichele Nourse. Myxœdematous; very vascular.

ANGEOMATA.—40. *Angeiofibroma*.—H. P. R., 40 B. Mr. Carmalt Jones. Surface epithelium thin only; basal cells visible; dilated vascular channel clot; loose reticulum.

41. *Angeiofibroma*.—H. P. R., 57 B. 4610, female, aged three. Mr. Lennox Browne. Site: below vocal cord; laryngotomy.

42. *Angeiofibroma*.—H. P. R., 64 B. 43036. Dr. Percy Jakins. Site: on and below left vocal cord; large mass weighing 31 grs., size 10 × 15 mm.; myxœdematous; pigment; and extravasation of blood.

43. *Angeiofibroma*.—Specimen from Professor O. Chiari, described as laryngeal polypus, thrombosis, extravasation, pigmentation, and myxœdema. *Vide* JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. viii, p. 248.

44. *Angeiofibroma*.—Another specimen of laryngeal polypus showing changes similar to those in No. 41. *Ibid.*

45. *Angeiofibroma*.—"Transactions of British Laryn. and Rhin. Assoc.," 1891, Diseases of the Throat and Nose, 1899, p. 659. Mr. Lennox Browne. Male, aged forty. Site: left vocal cord, near anterior commissure; covering squamous epithelium; dilated thrombosed vessels; pigment extravasation.

46. *Angeiofibroma*.—Female, aged twenty-five, 84225. Dr. Percy Jakins. Site: left vocal cord; stratified epithelium thickened and corrugated; extravasation of blood.

47. *Angeiofibroma*.—Female, aged thirty-eight. Dr. P. H. Abercrombie. Smooth, squamous epithelium; old and recent extravasation; pigment. Site: right vocal cord.

48. *Angeiofibroma*.—Male, aged fifty-seven. Dr. P. H. Abercrombie. Site: right vocal cord; epithelium thickened and irregular; myxœdematous in parts; vascular channels many; walls thin.

49. *Angeioma*.—Male, aged forty-three, 30147. Mr. Chichele Nourse. Site: left vocal cord; vessels dilated; extravasation; old clot organising; red clot; epithelium stratified and thickened.

50. *Angeio-myxoma*.—H. P. R., 12 B. 26337, male, aged fifteen. Site: pharyngeal aspect of interarytenoid space; myxœdematous changes marked; vascular spaces distended; surface epithelium stratified, thin.

SOCIETIES' PROCEEDINGS.

AUSTRIAN OTOLOGICAL SOCIETY.

Meeting held October 30, 1905.

President: PROF. V. URBANTSCHITSCH.

Secretary: DR. HUGO FREY.

PROFESSOR POLITZER showed a *Histological Preparation from a case of Suppuration of the Labyrinth.*

The preparation came from a man, aged forty-two, suffering from phthisis. He had chronic middle-ear suppuration and a mass of granulations in the tympanic cavity. Weber's sign was positive on the affected side. On a radical operation being done the tegmen tympani was found carious. The posterior fossa of the skull and the sinus were exposed. The sinus was covered with granulations. Several days later death ensued from extension of the lung disease. The decalcified bone was cut in sections from behind forwards. The following conditions were found:

The fenestra ovalis was filled with a mass of purulent granulations which extended into the vestibule. The stapes was so dislocated that the foot-plate lay against the inner wall of the vestibule (a condition not hitherto reported). One of the crura of the stapes was missing, and only fragments of the other remained. The fenestra rotunda was also full of granulations and pus, the membrana tympani secundaria was perforated, and the inner wall of the labyrinth and the utricle covered with granulations. The facial canal was laid bare, its wall being entirely destroyed (no paralysis had been observed clinically). On the promontory was a carious patch from which a fistula ran forwards. Nowhere was there any new bone-formation.

In the cochlea pus was found in the scala vestibuli, on the basilar membrane and the membrane of Reissner, and in the scala media. No changes were found in the remaining parts of the cochlea. This explained the Weber's test. It might be suggested that the stapes was dislocated during the operation; it was hardly possible, however, that it could have been driven against the inner

wall of the vestibule through the mass of granulations, especially in the almost complete absence of the crura.

PROFESSOR V. URBANTSCHITSCH showed a *Patient who had suffered from a Discharge from the Attic and Headache for Eighteen Months.*

The effect of syringing out the attic with "salicyl-spirit" was tried preliminary to operation. Through the mistake of an assistant one day, instead of salicyl-spirit, 5 c.c. of carbolic acid was injected into the tympanic cavity. The mistake was noticed at once and the ear thoroughly syringed with water. The following day there was swelling and pain. A tampon was placed in the ear to prevent stricture or atresia. The profuse discharge of pus which made its appearance immediately after the injection quite ceased in three weeks. Since then the ear had been quite dry; the meatus was quite uninjured.

PROFESSOR URBANTSCHITSCH remembered a previous case in which concentrated carbolic acid was placed in the ear with the result that the tympanic membrane was permanently destroyed.

PROFESSOR POLITZER remarked that Burckhart-Morian had described a case twenty years previously in which also after the introduction, by mistake, of concentrated carbolic acid the suppuration completely ceased. In spite of this he would not risk using it.

PROFESSOR POLLAK said that he had lately had several cases of attic suppuration in which he had been thinking of doing the radical operation, but after treating them by the application of pads soaked in perchloride of iron solution a lasting cure was obtained.

Dr. V. HAMMERSCHLAG showed a *Pupil of the Deaf and Dumb School whose case presented some Points of Interest.*

The boy was born on November 19, 1894. His parents—father forty years of age, mother thirty-four years—were not blood relations. He had six brothers and sisters, who, according to the parents, were all normal; as they did not live in Vienna they could not be examined. The child was born deaf; he first commenced to walk at three and a half years.

Although the parents were not related, and in spite of the fact that in the entire ancestry of the child no case of collateral affection could be discovered, and that there were six brothers and sisters who certainly were not deaf, the case was probably one of hereditary degenerative deafness, as the following facts show.

The ear-drums on both sides were approximately normal. No sign of any acoustic power was observed; the child had never attempted to speak. The condition of the eyes was important; there was rotatory nystagmus, the result of congenital amblyopia; the fundus was normal. The forehead was very narrow; there was a protruding upper jaw, high palate; and on the left side an undescended testicle; from the forehead to the vertex ran a streak of white hair.

The condition of the nervous system was as follows: The child had an unsteady, flat-footed gait, the upper part of the body swung backwards and forwards; when going slowly the child staggered frequently from side to side, the movement reminding one of a drunken man. There were also other symptoms of cerebellar ataxia. The boy was a complete idiot, and had not so far shown ability to understand pictures.

The combination of derangements, deafness from birth, congenital amblyopia, and partial albinism, showed that the child must be regarded as an hereditary degenerative deaf mute in spite of the absence of the usual family history.

Dr. F. ALT exhibited an *Anatomical Preparation showing Cure of Thrombosis of the Sinus*.

The specimen came from a man who died of purulent meningitis subsequent to caries of the tegmen tympani and of the posterior wall of the pyramid. Almost the entire transverse and the sigmoid sinuses were filled with a solid cord, the size of a quill. No change was found in the other sinuses. Dr. Alt said that in the pre-operative days of otology frequently cases of purulent thrombosis of the sinus which got well without active interference were observed. The preparation submitted showed the condition of a sinus after cure of a septic thrombosis. No lumen remained, the sinus being completely occluded by dense fibrous tissue.

Dr. ALEXANDER referred to a case seen at Neusser's clinic in which all the sinuses were obliterated on the affected side. In a further case of pyæmia caused by ear disease there was purulent thrombosis of the sinus and extra-dural abscess; in this case the focus of disease in the sinus was closed off by a mass of connective tissue.

Dr. ERNST URBANTSCHITSCH showed a *Case in which Ménière's Symptom-Complex was Cured by a Gynecological Operation*.

The patient had suffered from typical attacks of Ménière's dis-

ease (deafness, loud noises, nausea, vomiting, dizziness) for two years, and had been confined to bed in consequence.

Eighteen months since a colporhaphy was performed to cure a prolapse of the uterus; for six weeks afterwards the attacks were much less frequent, and since then there had only been three attacks, two of them quite short, and all three after severe emotional disturbances. During the last twelve months there had been no attack. On examination of the ears, the ear-drums were seen to be slightly opaque, the Eustachian tubes were quite patent. On the right side there was severe deafness. There was horizontal nystagmus towards this side. It was difficult to explain the influence of the gynæcological operation on the attacks. Dr. Urbantschitsch suggested that possibly the anæsthetic was in some way responsible.

Dr. HEINRICH NEUMANN showed (a) *a Patient who was attacked by an Acute Otitis after a Nasal Operation.*

Six days after the operation there was a rigor, with high fever and symptoms of a mastoiditis. Under local anæsthesia the mastoid process was opened, without, however, any relief to the symptoms. Thinking that there might be a thrombosis of the jugular vein, Dr. Neumann exposed it at the lower end of the sinus. Severe bleeding prevented the examination of the vessel-walls, and showed that at least there was no obstructing clot. The rapid improvement of the symptoms, however, after the operation, seemed to point to the presence of a partial thrombosis.

⚡ (b) *A Child, aged eleven months, who suffered from Transitory Facial Paralysis after a Radical Operation.*

The paralysis came on after the cavity had been packed, and lasted several hours.

Professor v. URBANTSCHITSCH suggested that it might have been caused by hyperæmia.

(c) *A Patient, aged sixty, who for four months had suffered from great Pain in the Ear and loud Subjective Noises.*

After Politzer's air-douche there was temporary vertigo and tinnitus, which ceased on inclining the head forwards. The mastoid process was anæsthetic. After paracentesis, pus, apparently under great pressure, escaped. Latent mastoiditis was diagnosed, and the mastoid process trephined. A bacteriological examination of the pus showed the presence of a diplococcus.

Dr. BIEHL remarked that in these latent abscesses diplococci were generally found. He had had three cases, in all of which were diplococci of great virulence.

(d) *A Specimen showing an Abscess of the Cerebellum.*

Professor POLLAK described *Methods for carrying and keeping aseptic Dressings and Small Instruments.*

The method for the former consisted of small boxes in which the sterilised dressing was wrapped up in a bandage form, so that only the amount required for immediate use need be disturbed; for the latter, of a conical glass tube, with cap, filled with sterilised liquid paraffin, in which a paracentesis needle or other small instrument could be kept ready for immediate use.

Professor POLLAK also showed *an Instrument for Vibration Massage of the Ear-Drum.*

It consisted of an oval, hollow ball of soft rubber, which was introduced into the meatus, making it air-tight, and was then vibrated by means of a motor.

Dr. ALEXANDER showed four cases:

(a) A workman, aged seventeen. Suffered from chronic suppurative otitis media and interna. Cholesteatomata. Fistula of external semicircular canal. Facial paralysis. The radical operation was performed, the labyrinth removed, sinus and dura mater of posterior fossa exposed. The case made a good recovery. Bacteriologically the diplococcus pneumoniae was found.

(b) A turner, aged eighteen. Suffered from chronic suppurative otitis media. Thrombophlebitis of sinus lateralis, bulb, and jugular vein. Pachymeningitis externa and interna of posterior fossa of the skull. The radical operation was done; the sinus, bulb, and internal jugular exposed; posterior fossa opened; pus and thrombus removed from the internal jugular, and a clot 6 cm. long from the lateral sinus. Afterwards some prolapse of the cerebellum; otherwise a good recovery.

(c) A case of chronic suppurative otitis media, thrombophlebitis of the lateral sinus, with perforation to the exterior, and formation of an extra-dural abscess. Radical operation. The sinus was exposed and its lateral wall removed. The internal jugular was exposed in the neck and ligatured. An uninterrupted recovery.

(d) A child, aged six, with symptoms of meningitis. The cerebro-spinal fluid was cloudy but contained no bacteria, optic neuritis, chronic suppurative otitis media, abscess of the temporal lobe, radical operation, opening and draining abscess, recovery. During the convalescence dysphasia, bradyphasia, right-sided hemianopia, and paralysis of the right extremities supervened, but eventually the recovery was complete.

Knowles Renshaw.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundred and Sixth Ordinary Meeting, May 4, 1906.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

The following communications were made :

THREE CASES OF SYPHILIS IN ONE FAMILY, (?) COMMUNICATED BY ORAL INFECTION FROM ONE TO THE OTHER; WITH PHOTOGRAPH.

Shown by Dr. H. J. DAVIS. The three patients were exhibited. The first to develop syphilis was a child aged eleven. There was no evidence of genital infection, and she was a virgin, and first attended under his colleague Dr. Abraham, in the skin department of the West London Hospital last autumn, with a "dusky, macular eruption on arm, legs, body;—tonsillitis, severe adenitis, and enlarged glands in neck and groin, but no appearance of primary sore." She was treated with mercury, and the rash soon vanished under treatment.

The child's grandmother, aged sixty—a widow fourteen years—nursed and slept with the child during her illness. Last December she became ill, and in February came under his (Dr. Davis') care, looking extremely ill with tonsillitis, adenitis, a typical rash, and early iritis, and she was at the present moment suffering from virulent syphilis. There was no evidence of any primary sore.

A fortnight ago the child's aunt, who was inhabiting the same flat as the child and her grandmother, attended in the surgical out-patient department of his colleague Mr. Baldwin, with a

chancre inside the right nostril; indurative œdema and adenitis were very marked, and the appearance was suggestive of malignant disease of the nose and upper jaw.

At the present time there were mucous patches on the tonsils, early roseola, and the primary sore could be seen at the junction of the skin and mucous membrane of the right nostril. There was still considerable infiltration and œdema, but the local conditions had subsided rapidly under mercury.

Dr. Davis thought the sequence of cases of great interest, and he had no doubt that the woman contracted the disease from her grand-daughter, and communicated it to her daughter by oral infection. Photographs of the three patients were exhibited.

The PRESIDENT asked if there was any history showing how the child became infected.

Dr. J. DONELAN also asked how the family became infected. He had occasion to look up the literature of extra-genital chancre lately, as during the past few years he had seen some cases in which the disease could not have been contracted in any vicious way, or by kissing, the only possible channel of infection being the use of spoons, etc., in a family where the foreign butler was suffering from buccal syphilis. Those who had to do with the foreign population of London must be struck with the number of cases of chancre of the tongue, and wonder that these extra-genital chancres were not more frequent now that restaurants were so much more frequented than formerly. The subject of extra-genital chancre was of much interest, and Sendziak had published a number of cases including chancres of the nose and ear. One of the most curious instances was that of a primary chancre of the pleura, reported by Dominicus. He desired to compliment their visitor Mr. Aslett Baldwin on his excellent photographs, which showed the great value of orthochromatic plates in recording morbid conditions.

Mr. ASLETT BALDWIN thought his case of chancre in the nose was of interest because of its rarity, and also because of its similarity to malignant disease; in fact, several who saw it at first suggested that diagnosis. When the woman was first seen, eight days ago, she looked and felt extremely ill, and had severe pain in the nose. She had been taking mercury for the above time, and was already much better. He thought the series of cases showed the importance of warning patients with syphilis that the disease is communicable.

Dr. DAVIS, in reply, said in July of last year the child went to a bean-feast, and the first symptom of syphilis that she had was severe tonsillitis. She was still taking iodides. Her grandmother, who slept with her, contracted the disease about Christmas, and had severe tonsillitis, but no sign of a primary sore. A few months later a daughter attended Mr. Baldwin's out-patient department with a sore in the nose. Dr. Abraham, under whose care the child had been, had told him that it was not uncommon in South Africa for syphilis to run through a family without any evidence of a primary sore: they had simply tonsillitis and a rash. He had never met this in England.

FISH-HOOK REMOVED FROM THE ŒSOPHAGUS.

Shown by Dr. D. R. PATERSON. A boy, aged thirteen, swallowed a fish-hook about the size of No. 7 Limerick, and was admitted to hospital with the loop of the gut protruding beyond the teeth; on pulling on the gut pain was felt in the centre of the chest. A skiagram showed the hook impacted opposite the fifth dorsal vertebra. Chloroform was administered and an œsophageal tube passed over the gut into the gullet, where the hook was seen fixed in the wall to the left side. The long tubular end-piece of a saliva pump was now threaded over the gut and passed down so that its bulbous end rested on the point and barb of the hook. When the gut was pulled tight complete power was obtained over the hook, which was easily detached and removed.

TOOTH-PLATE REMOVED FROM THE ŒSOPHAGUS.

Shown by Dr. D. R. PATERSON. The patient, a woman aged thirty-six, swallowed, during sleep, a tooth-plate having four teeth and two hooks or clasps. A skiagram showed it opposite the supra-sternal notch. Fortunately no attempt had been made to dislodge it by probang. An œsophageal tube was pressed down and the plate was removed by the straight laryngeal forceps.

SKIAGRAM OF THE NECK IN A CASE WHERE A PIECE OF MEAT WAS IMPACTED IN A STRICTURE OF THE GULLET.

Shown by Dr. D. R. PATERSON. This case was a lad who had "a small swallow" for some time. In the attempt to swallow a piece of meat it stuck in the gullet and blocked it so that nothing could be passed. Attempts were made by probang and coin-catcher to push the obstruction down, and considerable force was used without result. Twenty-four hours afterwards on admission to hospital the lad looked very ill, had a high temperature and a rapid pulse, and much swelling on the left side of the neck, with distinct emphysematous crackling. He was quite unable to swallow anything. Under chloroform great swelling and œdema of the entrance of the œsophagus and about the left pyriform sinus were seen. An œsophageal tube was passed, and opposite the cricoid cartilage an impacted piece of beef was removed. There was narrowing of the gullet at that point. Swallowing was at once re-established. Gradual recovery took place. Considerable damage

had been inflicted by the probang and coin-catcher, and this case indicated that their indiscriminate use should be discouraged, more especially as we have now instruments of precision.

LEFT RECURRENT PARALYSIS AND PARALYSIS OF THE SOFT PALATE
ASSOCIATED WITH MIDDLE-EAR DISEASE AND FACIAL PALSY ON
THE SAME SIDE.

Shown by Dr. D. R. PATERSON. A female, aged twenty-four, noticed deafness in the left ear which was followed by facial palsy three or four weeks later. Six months later still weakness of voice was observed, with occasional uncertainty in swallowing. This has remained practically unaltered. At the present time the left recurrent nerve is paralysed and the soft palate is weak on that side. There is complete left facial palsy. She hears nothing in the left ear; the bone-conduction is increased and the inner part of the meatus is swollen and has a vivid red appearance. No details of the membrane can be made out, the swelling being somewhat resistant to the probe. There is no headache, and the eyes are normal. She has been under observation for two months and there has been no apparent change.

Dr. DUNDAS GRANT, referring to the case of recurrent paralysis, said the later history would be very important. There was a combination of nerve-lesions which pointed to something near the apex of the petrous bone, such as might be due to tubercular disease or to new growth. But with regard to the latter there was a singular absence of glandular enlargement in the neighbourhood. He asked whether there was anything in the naso-pharynx or in the history to account for it.

Mr. BARWELL asked whether the ear-drum was normal and whether the deafness was of the nerve or the middle-ear type. He did not understand whether there was suppuration in the middle ear when the attack of facial paralysis came on or whether it was nerve-deafness arising at the same time as the lesion of the other nerves.

Dr. STCLAIR THOMSON said he had a case, of which his memory was somewhat hazy, about eight years ago, the record of which was in the *Clinical Society's Transactions*. It was somewhat similar to the present case. The patient was a man aged thirty-six, and was brought because of difficulty in swallowing; there was paralysis of the recurrent laryngeal nerve on the left side. The history given was that one year and a half previously the patient was under Dr. Urban Pritchard for Ménière's disease. He had a thickened, red, bulging drum, and nerve-deafness on that side. The case at first was taken to be early malignant growth of the oesophagus; the condition of the ear was thought to be merely a coincidence; and the symptoms in the ear and the throat were not regarded as associated. He died of an intra-cranial growth. There were no enlarged glands and the progress of the case was remarkably slow.

Dr. DONELAN thought the case was of centric origin, perhaps due to a tumour affecting the pons or embolism in that region, as it appeared

to be an irregular form of Avellis' well-known group of symptoms. Where the palate and vocal cord alone were associated the lesion was generally peripheral. A number of cases had been recorded where paralysis of the shoulder was associated with that of the palate and vocal cord. He had not seen any case in which the facial was included, but he believed some rare cases reported by members of this Society are referred to in Professor Poli's excellent paper in the current number of the *Italian Archives of Laryngology*. He thought the engorgement of the tympanum was due to implication of the sympathetic.

Mr. CLAYTON FOX asked if there had been any giddiness. It appeared to suggest sarcoma of the dura mater, starting from the posterior part of the petrous bone, involving the seventh, eighth, and ninth, and vago-accessory nerves. The patient had distinct difficulty in swallowing.

Dr. WILLIAM HILL said he did not think it was made clear whether the auditory nerve was involved. Possibly the middle-ear disease had nothing to do with the nerve-lesion which had produced the facial paralysis and the affection of the recurrent laryngeal.

Dr. PATERSON, in reply, said there had been nothing in the nasopharynx, nor any suppuration in the ear. She heard nothing on that side, and bone-conduction was increased there. It appeared as if the middle ear were pushed out; the swelling on the floor of the meatus was distinctly hard to the probe. Therefore he did not think vaso-motor changes would account for it. There was no giddiness, and the onset of the deafness and the facial palsy were practically simultaneous. She had been having 30 gr. a day of iodide of potassium during the past two months, but without any change, and, according to the patient's account, there had been practically no alteration in two years.

The PRESIDENT said it was possible there was a growth, and members would be glad to hear the after-history of the case.

BILATERAL ULCERATION OF THE POSTERIOR SEGMENTS OF THE VOCAL CORDS IN A MAN.

Shown by Dr. H. PEGLER. There had been temporary improvement under iodide of potassium.

Dr. DUNDAS GRANT thought it was a beautiful case of pachydermia. The patient had been a vegetable dealer, and a hawker previously to that, occupations leading to excessive strain on the vocal cords.

The PRESIDENT also thought it was a case of pachydermia because of the mobility of the cords and the depressed points, with soft tissue round them and the way in which they became flattened. The patient was young for it, but perhaps that did not matter if the habits were sufficient.

Dr. H. PEGLER expressed his thanks for Dr. Grant's opinion, which accorded to a certain extent with his own view, though the depth of the ulcerations had prevented his regarding it as a typical form of pachydermia. The appearances had altered somewhat from time to time.

A NEW NASAL SAW.

Shown by Dr. E. A. PETERS.

The PRESIDENT asked what was the object of the concavity of the saw.

Mr. H. TILLEY asked what class of case Dr. Peters used the nasal saw for.

Dr. PETERS, in reply, said the saw was very rigid, and the concavity fitted in with the direction of the cut. He admitted that submucous dissection had made a good deal of difference in operating, but there were some cases, particularly where there was a spur from the floor of the nose, in which removal was difficult by the submucous method. He thought there was still room for a saw.

FOUR CASES OF CHRONIC FRONTAL EMPYEMATA OPERATED ON BY A SIMPLIFIED KILLIAN OPERATION.

Shown by Dr. HERBERT TILLEY. CASE 1.—Child aged six and a half, who had already been operated upon for chronic suppuration of the lacrymal sac (left). The fronto-ethmoidal cells were in an empyematous condition.

CASE 2.—Young adult, aged twenty-five, dermoid cyst over right eye, beneath external angular process. Nasal suppuration present, and found to be due to chronic empyema of right maxillary antrum. Frontal sinus healthy.

CASE 3.—Female, aged twenty-three. Bilateral fronto-ethmoidal empyemata. The left side treated by older method, viz. free opening of sinus, followed by "packing," the right by a simplified Killian operation, with immediate closure of the wound.

CASE 4.—Male, aged fifty-three. Chronic empyemata of left fronto-ethmoidal sinuses. Simplified Killian operation. Immediate closure of wound. Discharged from hospital eight days after operation. Almost total absence of visible scar.

The "simplification" referred to consists in leaving the floor of the frontal sinus untouched, otherwise the procedure is the same as in Killian's operation.

Dr. DUNDAS GRANT said he did not think Killian always removed the floor of the frontal sinus. He (Dr. Grant) agreed with Dr. Tilley, that removing the floor added considerably to the laceration, and if such results were obtainable in all cases without removing the floor, it was very desirable. In a recent case he used exactly the method shown by Dr. Tilley, and when it came to be a question of removing the floor, he felt he would rather leave it alone, as it added to the difficulty of an operation already not simple. The case eventually did very well. The friends were delighted with the absence of deformity. The great point which Killian had brought out was the ingenious method of preserving the bridge along the upper margin of the orbit, and the elderly man in Dr. Tilley's series showed how perfect the result might be in regard to disfigurement. The scar in the little girl was more prominent, though in time that might disappear. Perhaps the healing was complicated by the suppuration in the lacrymal sac. Whether the floor was removed or not, one should practise

the preservation of the bridge over the margin of the orbit and the opening through the ascending process of the superior maxilla. Those who had not done this could have no idea of the magnificent access it gave to the ethmoidal cells.

Dr. SCANES SPICER said that in many such cases the procedure was attended by much scarring of the face. He thought that equally good results could be obtained by the less extensive operations which were generally adopted eight or ten years ago. The scars on the faces of the woman and girl shown to-day were both serious. Of course, if one had operated two or three times by removing the middle turbinate body, destroying the ethmoidal cells, and doing the old operation followed by trephining the anterior wall and curetting, then if necessary, one might justifiably go on to extirpation of the lower part of the cavity. One should be very guarded about saying a frontal sinus case was *cured* if there was no pus seen. He had been deceived in many cases in that matter. Even nine months after an apparent cure a cold seemed to light up the whole thing again. He was not clear why the term "dermoid cyst" was applied to one case. He understood the frontal sinus was not suppurating, but he had seen one or two similar cases which had led into the frontal sinus, owing to the extension of that sinus outwards.

Mr. STUART-LOW said there was no scar in Killian's cases, whose results were marvellous, and this was largely due to his skill in bringing the edges accurately into apposition by means of aluminium wire sutures. He made slight transverse incisions at intervals simply through the cuticle, so that he might more readily and directly appose the edges in stitching up. It was altogether incorrect to say that because Killian removed the floor of the frontal sinus diplopia frequently followed. Diplopia seldom happened even when the trochlea was removed, which occasionally occurred. He confessed to a feeling of disappointment since examining these cases as the scarring amounted to permanent disfigurement, and it was questionable whether a radical remedy had been effected.

Mr. HERBERT TILLEY, in reply, said whether as good results could be obtained with a smaller operation depended on the nature of the case. If there was extensive infection of ethmoidal cells a larger operation must be performed than when the frontal sinus was alone diseased. Dr. Spicer had said that in some of the patients shown there was still a complaint of a purulent discharge. In the case of the boy who had the dermoid cyst the radical maxillary operation was performed on the right side only ten days ago, and the secretion he complained of was merely the mucus from the granulating cavity, and as the frontal sinus was not affected in this case it was scarcely fair to speak of it as "still discharging." In reply, again, to Dr. Spicer, a dermoid cyst was spoken of because there was a large tumour pressing the eyeball downwards and outwards, and when it was opened cheesy material came away, which the microscope showed to consist of the contents of a dermoid tumour. This patient showed a considerable deformity, but that was entirely due to the dermoid cyst and had nothing whatever to do with the sinuses. He was not ungrateful to Mr. Low for his criticisms, and he (the speaker) felt that the operative procedure upon the sinuses had not been reduced to perfection. His recent cases, he thought, would show as good results as could be wished. If more care were taken in suturing the external wound he thought as good cosmetic results would be obtained here in London as elsewhere. He would be quite content if he could always obtain as

good a result as was exemplified in the case of the man shown to-day. The little girl's case was, again, scarcely a fair one to criticise from the point of view of the operation on the frontal sinus, because not only was it recent and had not had time to heal, but when the patient was transferred to him there was a suppurating fistula over the lacrymal sac and the surrounding skin in a state of inflammation, so that he was operating on a case which was unfavourable to start with. If he had been intent on showing his best results from the cosmetic point of view, he would have brought forward only the man on whom he operated last week, and who had had no previous operations performed.

A CASE OF TUBERCULOSIS OF THE SOFT PALATE, THE PHARYNX, AND THE EPIGLOTTIS.

Shown by Mr. CLAYTON FOX. On April 11, 1906, a woman of delicate appearance, aged thirty-two, was admitted as an in-patient at the Metropolitan Nose, Ear, and Throat Hospital, complaining of sore throat, pain on swallowing, cough, and accumulation of phlegm, of seven months' duration (she had previously been treated as an out-patient).

Family history.—One brother had had three attacks of pleurisy; all other members of family healthy. No history of phthisis, syphilis, gout, or rheumatism.

Previous history.—Her health had been good till last August, when the throat began to trouble her. Two children born alive, both very weakly. One miscarriage, four years ago.

On admission.—There were several greyish-white hemispherical nodules on the pillars of the fauces and velum, especially above and on either side of the base of the uvula; some had broken down, leaving roundish, shallow ulcers with grey bases, and devoid of any reactionary areola.

Where the posterior pillars of the fauces shade off into the pharyngeal wall there was on either side an elongated, shallow ulcer with greyish-yellow speckled base and irregularly-shaped, nibbled edge, the latter slightly raised above the neighbouring mucosa. The left anterior pillar had a clean, red, nibbled appearance, no slough being present. There was marked pallor of the mucosa of the hard palate, velum, and fauces. There were two small ulcers elongated in shape and having an eaten-out look on the laryngeal aspect of the free border of the epiglottis. Both arytenoids and the right ventricle bands were swollen. Some of the upper deep cervical glands of the left side were slightly enlarged. An examination of the lungs revealed some impairment of resonance over the upper right lobe. Inspiration was wavy, with prolonged

expiration over this area, whispering pectoriloquy was present. Sibilant rhonchi on expiration were present on some days over the whole of the right lung. There were no other adventitious sounds. Patient has had a temperature of remittent type since February 28, accompanied by night-sweats and loss of flesh. Sputum has been examined on two occasions, with a negative result. On April 18 attention was called to an ulcer on the posterior part of the left labium majus, elongated and oval in shape, the base covered with pale granulations and edge indolent and livid. Neither the base of this ulcer nor the tissues around were indurated. The inguinal glands on the same side were slightly enlarged. The post-nuchal, the suboccipital, the epitrochlear, and the glands generally were not enlarged. There was no rash present. Patient has been treated with iodide of potassium and quinine, also with iodide of potassium and mercury. Locally a mixture of carbolic acid, formalin, and lactic acid has been rubbed into all the ulcerated parts, and vapour creosoti has been inhaled.

The chief points of interest in this case are :

(1) As to whether the pharyngeal and laryngeal lesions are the result of one syphilitic inoculation.

(2) Are the lesions pharyngeal and vulvar tubercular ?

(3) Is the vulvar sore a chancre, the secondary symptoms not having yet appeared ?

(1) It would be difficult to reconcile the fact that a sore of two months' duration could be associated with such pronounced pharyngeal and laryngeal ulceration without other manifestations of secondary syphilis, rashes, mucous tubercle, systemic glandular enlargement, etc., conditions absent in this case.

(2) Appearances of the lesions and symptoms favour the idea that all the lesions may be tubercular.

(3) Against the vulvar sore being a chancre we are confronted with the facts that it is not indurated, and that although of two months' standing, the usual secondary phenomena are conspicuous by their absence.

Mr. BARWELL regarded it as tubercle alone.

Mr. CLAYTON FOX, in reply, said he thought it was tuberculosis of the pharynx and epiglottis. His only doubt concerned the lesion on the vulva, which was of two months' duration, and which, except for the absence of induration of the sore and the enlarged inguinal glands, presented the characters of chancre. Against that was its two months' existence, and the absence of secondary phenomena. None of the systemic glands were affected.

A CASE OF SWELLING BELOW THE ANTERIOR COMMISSURE OF THE VOCAL CORDS, CAUSING SOME DYSPNŒA, WITH DEFORMITY OF THE EPIGLOTTIS AND INDURATED SWELLING OF BOTH AURICLES IN A WOMAN AGED FIFTY-FIVE.

Shown by Mr. CHARLES PARKER. The patient had lived in India for two years and in Italy for one year. Eight years ago, after her return from India, she was out on a very cold night, and the left ear suddenly became extremely painful. The pain passed off within twenty-four hours, but the ear gradually enlarged and became very hard. Five years ago, whilst in the mountains of Italy and exposed to great cold, the right ear became similarly affected. For the last two months the patient has suffered from severe cough and the sensation of something in the region of the larynx which she could not expectorate, and for the last six days she has had distinct dyspnœa. At the present time both auricles are enlarged and deformed and of almost bony hardness, and the skin is white and shiny. The auditory meatuses are somewhat contracted, but there is no disease of the tympanic cavities, and the hearing is good. The nose is altered in shape, being more or less of the saddle-back shape; the nasal cavities are normal, except for some thickening of the cartilaginous septum. The naso-pharynx and oesopharynx are normal. The epiglottis is of a peculiar shape, thickened and distinctly yellow in colour, suggesting cartilaginous thickening. Abduction of the vocal cords is limited. Below the anterior commissure of the cords a red swelling can be seen extending to the trachea and more towards the left than the right side. In the neck some thickening and great hardness can be felt on the left side over the first few rings of the trachea. There is audible dyspnœa on the slightest exertion and noisy breathing during sleep. The case is shown for the purposes of diagnosis and to elicit opinions as to whether the condition of the ears and the laryngeal changes are due to one cause.

Mr. BUTLIN said he could not be sure about the laryngeal and infralaryngeal trouble, but thought there was some thickening to be felt from the outside. He had not seen anything like the ear condition in his life. The only condition which it seemed at all to resemble was that which sometimes occurred in the penis of gouty people—a carapace of firm, fibrous material. He had removed more than one of these, and the microscope showed fibrous tissue, perhaps due to degeneration. He did not regard it as a new growth.

Dr. DAVIS said he thought it resembled leprosy. There was infiltration, facial deformity, and silkiness of the skin of the hands, which were characteristics of the disease.

VILLOUS PAPILLOMATOUS GROWTH, PROBABLY EPITHELIOMA (BUT WITH DOUBTFUL HISTOLOGICAL CHARACTERS ; A HISTORY OF OLD SPECIFIC INFECTION ; ANTI-SPECIFIC REMEDIES NOT YET TRIED), IN A MAN AGED FORTY-SIX.

Shown by Dr. DUNDAS GRANT. The patient complained of pain in swallowing, dryness of throat, which had gradually developed and had lasted two years, while during the last three months there had been some bleeding from the throat. On laryngoscopic examination the cavity of the larynx was almost completely hidden by a red papillated mass of globular form, which at first sight appeared to be growing from the laryngeal surface of the epiglottis. During inspiration and phonation the right half of the larynx seemed to move, and after the extraction of a portion of the growth it was seen that the right vocal cord was normal, both in colour and mobility. The growth when moved by means of a probe appeared to be attached to the left half of the vestibule of the larynx, and several portions of it were removed by means of the snare. It was then seen that the left vocal cord was almost completely fixed, but free from ulceration of any kind. The voice was practically normal, and there was little or no interference with respiration. Microscopical examination of a small portion, removed by means of forceps, revealed thickened epithelium with œdematous infiltration, but no definite signs of malignant and neoplastic process ; a large portion removed more recently possessed characters more suggestive of malignant disease, which will be described by Dr. Wyatt Wingrave. There was some enlargement of glands at the angle of the left jaw. The laryngoscopic appearances are highly suggestive of epithelioma, and this is supported by the history of the disease, but the microscopical appearances are so little confirmatory, that the exhibitor thinks it advisable to try the effect of anti-specific remedies in view of the former infection, on the chance of the growth being one of the proliferated forms of syphiloma. He hopes to show the case again at the next meeting.

PREPARATIONS ILLUSTRATING DR. DUNDAS GRANT'S CASE OF LARYNGEAL GROWTH.

Shown by Dr. WYATT WINGRAVE. Fragments weighing 98 grains were removed at two sittings. They were soft and friable in consistence, mammillated and translucent in appearance.

Microscopically they consist of closely packed spheroidal cells, apparently derived from the surface epithelium of the cords from which they can be traced. The cells are grouped in large masses, separated by a very scanty stroma. Their nuclei are strikingly variable in size, many being four times as large as those of normal squamous epithelium. Mitoses are few and of a somatic type. Extra-cellular chromatin granules are few, lymphocytic infiltration is absent, and there are no concentric "pearls" or "nests."

It is evidently an epithelial growth, papillomatous in type, possessing, however, some striking variations from an ordinary papilloma, yet wanting the definite characters which constitute unequivocal histological malignancy.

Dr. WYATT WINGRAVE thought it was the kind of case in which the histologist could justifiably ask the surgeon to share the responsibility of the diagnosis. There were unmistakable signs of papilloma and an absence of the features of typical epithelioma. The cells possessed remarkably large nuclei, and there was no evidence of mitosis other than was found in somatic cells. The surface was distinctly mammillated, and before going into alcohol presented translucent characters more suggestive of papillary growth than epithelioma. One was justified in being suspicious of the case, because the enlarged nuclei were suggestive of a transition stage from innocence to malignancy.

Mr. BUTLIN said he had examined the case and had come to the conclusion that the condition was one of marked malignant disease. It was partially hidden by a large swelling above, and he thought that possibly Dr. Wingrave had not had a sufficiently characteristic piece to examine. The glands on both sides of the neck were very characteristic of malignant disease. It was, he thought, a hopeless case.

Mr. ROBINSON said he had come to the same conclusion as Mr. Butlin. He thought it undesirable to attempt its removal.

Dr. DUNDAS GRANT, in reply, said the only thing which threw doubt on the diagnosis was the microscopical appearance. The specimen for examination was obtained from deep in the growth, but possibly the characteristic changes would be found deeper. On the chance of its being specific, he proposed giving a course of iodide of potassium and mercury, the effect of which would soon show itself.

CASE OF EPITHELIOMA OF THE PALATE IN A MALE PATIENT AGED SIXTY.

Shown by Dr. DUNDAS GRANT. There is a shallow, oval ulcer of about the size of a shilling, chiefly on the left half of the soft palate but encroaching on the hard. The base of it is not materially indurated, but the edges are distinctly hardened and show a slight tendency to eversion. The patient complains of pain in his mouth, especially when eating or drinking, which has come on gradually and has lasted, as far as he can judge, for about three

weeks. The bacteriological examination reveals a few curved spirals of about four turns, fusiform bacillus, and some non-pathogenic organisms; but the bacteriologist, Dr. Wingrave, is unable to say that the *Spirochæte pallida* is present; such epithelial cells as were found in the scraping were normal. There is a hard mass of glands beneath the mastoid insertion of the left sterno-mastoid muscle. When first seen, three weeks ago, he was ordered 10 gr. of iodide of potassium with a drachm solution of perchloride of mercury, and on the 28th the dose of the iodide was increased to 25 gr.; the induration of the edges of the ulcer has increased in the interval, and the diagnosis of epithelioma is probably correct. Extirpation of the growth and of the glands is proposed.

Mr. ROBINSON thought it an interesting example of the superficial form of epithelioma. Some of those who saw it were suspicious that it might be specific, but he felt no doubt that it was epithelioma. He had several times removed such a condition.

Dr. STCLAIR THOMSON said he did not know whether Dr. Grant thought of operating upon the case with such extensive glands in the neck. He (Dr. Thomson) thought it was much too extensive. It was very much like a case he had in which, bearing out what Mr. Butlin said, pieces were removed for examination and reported to be papilloma, but in which one did not get down to the real growth. His case was shown at the Clinical Society, when all agreed that it was quite inoperable.

The PRESIDENT said the disease did not seem to have broken through the capsule of the glands, and in such cases the glands were removable. Such palate cases were very favourable for operation, and if it were surgically possible to operate on the case he thought it ought to be done. He judged that it was suitable for operation, the glandular operation being done first, and if the patient bore that well, finishing up with the palate, which could be done in a few minutes.

CASE OF MYCOSIS OF THE SOFT PALATE.

Shown by Dr. HERBERT TILLEY. Male, aged forty-two, with an area of inflamed mucous membrane on the soft palate immediately above the right tonsil—the area referred to is covered with what appear to be some twenty pustules about the size of a hemp seed. Patient complains of some pain in swallowing, or when the tongue is depressed. There is no history or signs of tubercle or syphilis in other parts of the body. Symptoms have been present for seven months.

The PRESIDENT thought the appearance was allied to that of the condition called leukoplakia; the formation in small, isolated spots he had found not uncommon on the palate. The condition, he thought, might have a syphilitic basis. He had seen this condition on the mucous membrane beyond the margin of an epithelioma, and though this condition

might exist for some years, he thought it was better to remove the mucous membrane in the present case in view of the possibility of an epithelioma developing.

Mr. STUART LOW said he had come to the conclusion that this was a case of epithelioma. The patient complained of pain on swallowing, on palpation through the mouth the pain was considerable, and a certain amount of induration could be felt.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Twenty-sixth Ordinary Meeting, held at the Medical Society's Rooms, No. 11, Chandos Street, Cavendish Square, W., Monday, May 7, 1906.

The President, A. E. CUMBERBATCH, F.R.C.S., in the Chair.

DISCUSSION ON "FIXATION OF THE STAPES."

INTRODUCTORY PAPER.

BY URBAN PRITCHARD.

MR. PRESIDENT AND GENTLEMEN,—There are two forms of fixation or ankylosis of the stapes: (1) fibrous, (2) osseous.

The first may again be subdivided into two:

(a) Where the fixation is due to fibrous bands stretched across the pit in which the stapes is situated, the bands binding the stapes more or less firmly in its position. These fibrous structures are the result of former non-suppurative otitis media, and have been demonstrated very beautifully by Politzer and other observers.

(b) Where the fixation is due to a solid mass or cushion of new tissue, the result of further organization of granulation-tissue which has been left from previous suppurative otitis media.

(2) Osseous fixation may also be subdivided into two forms:

(a) Ossification of the annular ligament of the stapes, which is apt to occur in the course of otosclerosis, from extension of the osseous change in the bony capsule surrounding the internal ear.

(b) A rare form of fixation due to ossification of a solid mass of new tissue, being, in fact, merely a further development of the second form of fibrous fixation, and therefore also primarily caused by former suppurative disease.

Diagnosis.—(1 a) There is sometimes considerable difficulty in recognising this form of fixation by fibrous bands, and especially

in diagnosing between fixation of the stapes and that of the other ossicles. There is marked deafness, considerable immobility of the ossicles, usually retraction, and some thickening of the membrana tympani. Inflation is followed either by no improvement to the hearing or only temporary improvement. There is increased bone-conduction, marked paracusis, high notes are heard better than low ones, and there are the other signs of chronic middle-ear catarrh.

(1 *b*) When the fixation is due to a solid mass or cushion of new tissue there is nearly always considerable loss of the membrana tympani and signs of former severe suppurative otitis media. Sometimes the remnants of the membrane are glued by the new tissue to the inner wall of the tympanic cavity. The tests point to middle-ear defect as in the first form of fibrous fixation.

(2 *a*) In these cases there are all signs and history of advanced otosclerosis. The membrana tympani is practically normal, unless there are catarrhal complications. There is marked deafness, and lessened mobility of the ossicles. Through the advanced condition of the otosclerosis the tuning-fork tests usually show reduced or normal conduction—*e. g.* internal as well as middle-ear defect. Paracusis is usually present, though not when the internal ear is very much affected. Tinnitus is often a very distressing symptom. Hyperæsthesia of the auditory nerve is frequently very marked, especially in very advanced cases where the internal ear is much involved.

But in spite of all these signs and symptoms it may be very difficult to make an absolute diagnosis of the ankylosis itself. Personally I am very sceptical of the value of the various tests that have been brought forward from time to time by various authorities, and I am very anxious to learn the opinion of the members of the Society on the value of the Gellé tests.

(2 *b*) Fixation by ossification of new tissue is very rare, but its diagnosis presents little difficulty, for besides the signs of former severe suppurative damage, the probe will readily reveal the bony nature of the mass.

Prognosis and treatment.—It must at once be admitted that fixation of the stapes in any form is fatal to the return of good hearing.

In the osseous forms there is no known treatment of any avail, and practically we may say the same of fixation by a mass or cushion of fibrous tissue, although Politzer, I know, has thought that there may be a future for operative treatment in some of these cases.

The prognosis and treatment in fixation from fibrous bands, though not very encouraging, are not quite so hopeless.

We have all come across cases in which considerable improve-

ment to the hearing has resulted from a fresh attack of acute otitis, which has broken down old adhesions and thus left the parts less fixed. However, we should hardly feel justified in inducing such an inflammation with its septic risks on the off-chance of thus improving the hearing power.

But in a way this may be imitated; the internal administration of iodides so as to produce slight coryza and with it some softening of the parts within the tympanic cavity, followed by somewhat forcible inflation, has been employed with occasional good results.

The introduction into the tympanic cavity of pepsin or still better of papain might more thoroughly soften the adhesions and allow forcible inflation to break them down.

Direct mobilisation of the stapes by opening the membrane and then loosening the stapes has been tried, but without any success.

Direct mobilisation by means of some modification of Lucae's instrument may prove of some service in the future, and on this point I am hoping for some valuable hints from our very ingenious friend Mr. Lake. For some time past we have all been trying indirect mobilisation by means of rapid pneumatic massage; at present our success has not been great, but really this mode of treatment is still on its trial.

Lastly, gentlemen, if you will allow me to wander into the realms of imagination and to build a little castle in the air, I should like to mention a vague idea that has struck me as to the possibility of making a new fenestra when the fenestra ovalis is rendered useless. Could we open the membrana tympani, drill a hole into the labyrinth, and graft, as it were, a flap of the membrana over the hole, so as to form a membrane for the new artificial fenestra?

If this could be done, might we not restore a considerable amount of hearing? At any rate the results of the recent operative work on the internal ear by Mr. Ballance, Mr. Lake, and others lead me to think it very possible. And if this were so, should we not have solved one of the greatest problems in the whole field of otology?

INTRODUCTORY PAPER.

BY THOMAS BARR.

GENTLEMEN,—In selecting fixation of the stapes as the topic for discussion to-day, the Council has invited us to turn to one of the

darker spots of otology. Less than two years ago, when introducing, along with Dr. Pritchard, a discussion at the Oxford meeting of the British Medical Association on the treatment of the dry non-suppurative forms of middle-ear deafness, which included fixation of the stapes, I reviewed at some length the multiform, though, I am afraid, mostly insufficient, methods of treatment. I shall not, therefore, to-day take up that aspect of the subject which has already been touched on by Dr. Pritchard. In regard to a condition which we have regretfully to admit yields but little to treatment, either surgical or medical, it is an important point gained if we can isolate the affection and differentiate it from other conditions.

I therefore propose taking up briefly the "differential diagnosis of fixation of the stapes."

Human hearing may be said to depend pre-eminently upon the integrity of the tympano-vestibular connection. Obstruction to the propagation of sound at this point of the hearing pathway is, of course, fatal to functional efficiency. Stiffening processes effectually check those indescribably fine oscillations of the foot-piece of the stapes, and shut out the patient from the world of sound.

It may be convenient to consider fixation of the stapes (1) as the main feature of so-called otosclerosis, in which bony fixation of the foot-piece is often associated with osseous changes in the labyrinthine capsule; (2) as found in non-suppurative catarrh of the middle ear, when the stapes may be fixed by inspissated secretion or organised catarrhal products in the pelvis ovalis, by induration of, or calcareous deposit in, the annular ligament, or by prolonged tension, or perhaps fixation of the whole chain of bones due to an indrawn membrane; (3) as a result of acute and chronic purulent processes, in the latter of which the stapes may be seen through a perforation, firmly imbedded in inspissated secretion or new connective-tissue formation. The first variety is probably the one chiefly intended to fall within the scope of this discussion.

At the outset we may remark that our knowledge of stapes ankylosis suffers from the fact that but few opportunities for *post-mortem* examination present themselves, as, of course, the condition does not lead to a fatal issue, and, therefore, our means of procuring anatomico-pathological confirmation of conclusions, drawn from clinical observations, are limited. Still, much valuable information has been gained by *post-mortem* observation following clinical experiments. Dr. Alfred Denker, of Erlangen, has gathered

together records of twenty-seven cases in his "Die Otosklerose," in each of which anatomico-pathological examination supplemented careful clinical observations during life; this work of Denker constitutes, it must be admitted, a most valuable contribution to our scientific knowledge of the subject. I may remark, in passing, that this valuable method of investigation seems to have been hitherto very much monopolised by continental workers, such as Bezold, Lucae, Hartmann, Politzer, Siebenmann, etc., and it is, unfortunately, noteworthy that in Dr. Denker's work British contributions are conspicuous by their absence.

Denker's cases yield important information, based upon *post-mortem* changes, both macroscopic and microscopic, in regard to the value and significance of the tests of Rinne, Weber, Schwabach, and Gellé, as well as the significance of abnormal perception of high and low tones.

With the methods of examination now at our disposal, it may be said that we are able, with an approach to certainty, to differentiate simple, uncomplicated fixation of the stapes during life from other conditions. We find a person suffering from deafness, more to speech than the watch, beginning imperceptibly and advancing gradually, without marked fluctuations and without any history of catarrhal or inflammatory attacks; we observe a normal condition of the tympanic membrane, with or without a pink coloured reflection; we find a permeable state of the Eustachian tube shown during Politzerisation or catheterisation, not only by the character of the auscultatory sounds, but (and I regard this as more important) by the distinct movement of the membrane outwards, observed by inspection; and, lastly, we find no improvement in hearing resulting from such an effective inflation.

So far the condition might be one of labyrinthine or nerve-mischief, and until recently there is no doubt that fixation of the stapes has been often diagnosed as nerve-deafness. If, however, we now find that bone-conduction is well maintained, that it is indubitably in excess of air-conduction as shown by each of the tests of Weber, Rinne, and Schwabach (the so-called Bezold's trio of symptoms), the diagnosis admits of little doubt. Further, if we are able to demonstrate that there is a raising of the lower tone limit, that is, impairment of the hearing of low notes, while the upper tone limit is normal, as defined by a series of tuning-forks and Galton's whistle, assurance would be rendered doubly sure, and the conclusion would be almost as certain as anything in medical diagnosis that the impediment to hearing is of the nature of fixa-

tion of the stapes, and definite labyrinthine disease would be excluded.

The diagnostic value of Bezold's trio of symptoms (namely, the tests of Rinne, Weber, and Schwabach) rests upon the best of all foundations, namely, clinical observation during life, along with microscopic and macroscopic examination after death. We are, therefore, justified in concluding that when this trio of symptoms exists, with an unchanged tympanic membrane, a patent Eustachian tube, and a negative result from inflation, the case is one of simple fixation of the stapes. The value of the tuning-fork tests in determining the state of the tone perception has an equally scientific basis, since Lucae, Schwabach, and Bezold have established by experiment that in fixation of the stapes the lower tone limit is raised, and that in pure cases of fixation a marked lowering of the upper tone limit has never been observed.

But cases are not always simple and uncomplicated. The tests, especially as applied to bone- and air-conduction, do not then agree—in fact, the one test may seem to contradict the other. We may find that where Rinne is positive, Weber's test may be accentuated in the affected ear. Rinne may yield a positive response to a higher pitched tuning-fork (say 256 vibrations) while negative to a lower pitched (say 128 vibrations). It is a familiar experience that low notes are more likely to yield a negative result by Rinne's test than higher ones. The value of Rinne's test is also limited by the well-known fact that in elderly persons it usually gives a positive result. When the results of these tests are not in harmony, neither pointing to simple fixation nor to labyrinthine disease, we are then very much aided by testing the hearing duration with a series of tuning-forks embracing a considerable extent of the tone scale. For this method we are very much indebted to A. Hartmann, whose experiments with tuning-forks extended to nine octaves, and were of the most painstaking character. He found that in fixation the hearing power by air-conduction gradually increased, both in intensity and duration, as he ascended the tone scale from below upward. In nerve-deafness, on the other hand, the hearing duration gradually decreased as he passed from the lower to the higher tones. Hence if, with a series of tuning-forks, we find a raising of the lower tone limit, with no change in the higher tone limit, we have probably fixation of the stapes, while with impaired hearing of the lower tones and at the same time impaired hearing of the higher tones we are likely to have fixation of the stapes plus labyrinthine

disturbance. The impaired hearing of the lower tones will point to fixation of the stapes, while the impaired hearing of the higher tones will indicate labyrinthine mischief.

These conclusions I regard as of great value, and although in my practice I generally limit myself to a series of five octaves, extending from C 128 vibrations to C⁴ 2048 vibrations, using Galton's whistle for still higher tones, I have learned to put great stress upon such tests, especially when a mixed condition exists.

As an aid to the differential diagnosis we have, in my opinion, a test of some value, although not always reliable, in Gellé's experiment. If the sounding tuning-fork by air-conduction, or placed on the vertex of the head, remains unaltered in loudness when the column of air in the meatus is compressed (negative result) the diagnosis of a fixed stapes may be regarded as strengthened. When the sound is, on the other hand, diminished during the compression there is probably a movable stapes. Of course, if we have an intelligent patient the result is more reliable. The same may be said regarding all the other tests. A musical patient is also a great desideratum in all these tests. The test seems to be of most value when the deafness is very marked. One sometimes observes giddiness during the compression of the air in the meatus: this I look upon as indicating labyrinthine mischief.

In forming a differential diagnosis we would properly and naturally consider all these tests, not only in relation to one another, but also in connection with other symptoms, subjective and objective, and such factors as the history and the etiology. The exhibition of the phenomenon of paracusis Willisii would, for example, furnish confirmatory evidence of fixation. Weight would also be attached to the gradual occurrence of the deafness, as compared with a sudden onset, the latter pointing more to labyrinthine disease. The presence of an hereditary element usually favours the idea of fixation, while such causes as syphilis, influenza, exposure to loud sounds, nerve-shock, would point more to labyrinthine mischief. Giddiness and noises in the ear no doubt occur in both, but they are more frequently met with and are more pronounced in labyrinthine affections.

The forms which result from and are mixed up with catarrhal and inflammatory products and processes in the middle ear generally manifest themselves by objective changes in the tympanic membrane or tympanic contents, such as cicatrices, atrophy, opacity, calcareous deposit, permanent retraction of the tympanic membrane. Probably the fixation in many of these cases is not so

inveterate as in the oto-sclerotic form, and is more due to the binding of the crura to the walls of the pelvis ovalis or to prolonged retraction of the tympanic membrane, with more or less fixation of the malleus and incus, rather than to osseous changes in the annular ligament.

Can we distinguish fixation due to binding of the crura or connected with general ossicular tension from that due to rigidity of the annular ligament? This distinction is somewhat important in regard to treatment, as the former are more likely to be benefited by surgical treatment than the latter.

In these mixed conditions I think it is possible to gain some information from exposing the stapes, when the incudo-stapedial articulation is situated lower down than the periphery, by forming a window opening through the tympanic membrane, and observing through it the condition of the crura, and even determining by pressure, say with the feather probe of Lucae, the mobility of the stapes. Such a window is easily and painlessly made, as I can testify, after local anæsthesia has been produced by Neumann's method, which was described and demonstrated by Mr. Seymour Jones and my son at a meeting in Manchester. When the region of the stapes is already exposed by a perforation, and the condition of the crura partially rendered visible to the eye, as well as evident to the touch, the state of matters, of course, admits of no doubt.

In conclusion, I would say that there is need here for more anatomico-pathological investigation in connection with careful clinical observation, and I fear that we in this country are not doing our fair share of such work. We want, for example, to know more as to the state of the membrane closing the fenestra rotunda, which must play a part in the phenomena of fixation of the stapes. In this direction, gentlemen, lies the possibility of further advance in the knowledge and treatment of this serious, and hitherto almost intractable, impediment to hearing.

INTRODUCTORY PAPER.

By ALBERT A. GRAY.

While recent years have seen but little advance in the treatment of the condition of fixation of the stapes, and while even the etiology of the affection is still obscure, the pathologist fortunately

An introductory paper by Mr. Richard Lake, who unfortunately was prevented from being present, was read by the Secretary; we hope to publish this paper in full in an early issue.

has a different story to unfold. Our knowledge of the pathological anatomy of fixation of the stapes is, of course, by no means complete, but the same may be said of many other affections; and when the difficulties of the cases are considered there is nothing to be ashamed of in this respect. Sooner or later it is to be hoped the increase of the knowledge of the pathology of the conditions under discussion will bring about a revolution in the treatment of this disease.

It is impossible owing to the limits of time to go into the history of the pathology of fixation of the stapes in the oval window. It should, however, be pointed out that the discovery of the condition is by no means recent. It was known to Morgagni ⁽¹⁾, to Valsalva ⁽²⁾, and to Meckel ⁽³⁾, and was by them associated with deafness. Toynbee's ⁽⁴⁾ investigations were the next great step in the elucidation of the question; and though they lose a great deal of value from the fact that, in the great majority of cases, there was no clinical history associated with the preparations themselves, the central fact remains that Toynbee first showed the great importance of the subject. Voltolini's ⁽⁵⁾ remark upon the comparative worthlessness of Toynbee's work is therefore not only ungracious in the highest degree, but is directly untrue. The fault did not lie with Toynbee but with the other aurists of the day who failed to carry on the work to its natural conclusion—the relationship of the anatomical conditions to the clinical picture of the disease. Since that time pathological knowledge has increased, at first slowly, but latterly with greater rapidity, until now the anatomical changes which are to be associated with the fixation of the stapes in the oval window are fairly well known. On the other hand, it must be admitted that the pathogenesis of the disease is still very obscure.

The term "fixation of the stapes" does not describe, properly speaking, a pathological entity. It is really a result of other pathological changes which are widely different from one another. Thus, it may be the result of accident, as in a case recorded by Politzer. Again, there can be little doubt that the fixation of the bone which sometimes occurs as a result of suppurative changes in the middle ear, is frequently due to direct affection of the joint by the suppurative process. The pathological aspect of such cases is too obvious to require more words, and in the following pages it will be understood that reference is made only to the pathology of fixation of the stapes as we find it in cases of so-called osteo-porosis of the temporal bone.

Fixation of the stapes is a result of changes in the bony capsule

of the labyrinth. So far as is known it does not occur as a result of direct inflammatory changes in the tympanum apart from the exceptions stated above. Habermann, however, holds that the origin of the disease is to be found in the tympanum, and that the process passes from that cavity into the bone and thence into the stapedio-vestibular articulation. Other observers hold that the change takes place primarily in the bone, while a few maintain that in some cases the origin of the disease is to be found in the tympanum and in others in the bone itself. Before discussing these different views in detail it is necessary to describe the actual anatomical changes which have been found.

As viewed by the naked eye it has been found that the stapes may be fixed to the oval window by bone either along the margin of the foot-plate or by means of bony trabeculae running from the limbs of the ossicle to the adjacent portions of the oval window. In some cases both of these methods of fixation may be present. Occasionally there is a bony protuberance extending from the foot-plate of the stapes into the vestibule. The most common portion of the stapes to be affected is the superior margin, and more particularly, the anterior portion of that margin. Sometimes the whole margin of the foot-plate of the stapes is fixed to the walls of the oval window and no trace of a joint remains, as in a case described by Katz. The joint cartilages are, of course, destroyed in the process, but at certain portions where the annular ligament remains the cartilage is left intact.

When examined by the microscope it is found that this new growth of the bone is merely a portion of a change in the capsule of the labyrinth, which has extended into the joint and produced the changes just described. This change in the capsule is a very remarkable one and demands attention. It may occur at almost any point in the temporal bone, and, indeed, is frequently present in several places at once. It is not always limited to the capsule of the labyrinth, nor even to the temporal bone itself, as was shown by Katz ⁽⁶⁾ and by the present writer ⁽⁷⁾. Both these have demonstrated its presence in the anvil and hammer. It is even probable that the affection may be found in the bones of the head, for in the case described by the writer these bones were all remarkably porous and in a state quite different from that which is found in the healthy bone. For the present, however, we are concerned chiefly with the changes which occur in the capsule of the labyrinth and produce the condition of fixation of the stapes.

The point at which the change in the bone takes place is most

frequently that portion of the capsule which lies immediately above and in front of the oval window. The change is not one of transformation of old bone into spongy tissue, but is the result of the absorption of old bone followed by the formation of new bone. The new bone is always spongy at first and may remain so. Frequently, however, it becomes transformed into dense bone. The new spongy bone is possessed of large medullary spaces, containing connective tissue rich in cells, and large thin-walled blood-vessels. The Haversian canals also are wider than under normal circumstances. The process begins by the osteoclasts absorbing the old bone. Side by side with this process of absorption new bone is laid down in the usual way by the osteoblasts, and the new-formed spongy bone may, in process of time, become dense once more. The new bone stains deeply with carmine and hæmatoxylin dyes, and the medullary spaces contain, in all cases in which the change is recent, a large number of multinuclear cells, wide blood-vessels with thin walls, and in some cases true bone-marrow. In later stages, if the new bone goes on to sclerosis, the cells become less numerous, the blood-vessels become smaller, and the medullary spaces are encroached upon and may ultimately disappear. As sclerosis progresses the affected part shows less and less affinity for the stains of hæmatoxylin and carmine. This process is very gradual, and there is no marked line of demarcation between the sclerosed bone and the spongy bone from which it has developed. This is in marked contradistinction to the state of the bone in the early process of the disease; for, as stated above, at the beginning of the affection there is a very sharp line of demarcation between the new-formed spongy bone and the dense, healthy bone around it.

The most common point at which these changes appear is that portion of the bony capsule which lies immediately in front of and above the oval window. But in most cases this is not the only focus of disease, and it may be found in any part of the capsule of the labyrinth or in other parts of the temporal bone, and possibly sometimes in the other bones of the head. It is unnecessary to mention all the points at which foci of the disease have been noticed, but it may be stated that the modiolus has been found to be diseased and the ganglion spirale affected by the encroachment of the bone. The cavity of the labyrinth is sometimes encroached upon. Exostoses are not infrequently present, and occasionally the round window is very much diminished in area. In these cases it has been found that the hearing power is much more seriously affected than when only the oval window is the seat of the disease.

In the great majority of the cases which have been reported there has been found no change in the tympanic cavity. The mucous membrane is nearly always perfectly healthy and the Eustachian tubes clear and free from disease. The tympanic membrane is in the great majority of cases free from disease and is not indrawn. It is true that there are some exceptions to this general rule, such as have been observed by Habermann (⁸) in particular, in which thickening of the mucous membrane of the tympanum was found. Similar cases have been reported by Katz. In this connection it should be pointed out that the first of these observers has found that the various foci of the bony changes are most frequently located round the larger blood-vessels which pass in from the periosteum of the tympanum to the bone surrounding the labyrinth.

Pathogenesis.—When we come to consider the pathogenesis of the disease there is by no means the same agreement among investigators as is found in the results of anatomical examination. This is to be expected. It is one thing to ascertain facts which are left unchanged, or nearly so, by death, but it is quite another thing to elucidate the living physiological disturbance which has brought about these anatomical changes. Indeed the matter must be to a great extent speculative.

There are several views as to the mode of origin of the disease. Habermann (⁹) and Katz (¹⁰) are of opinion that the source of the diseased process is to be found in an inflammatory action in the tympanum. Scheibe (¹¹) also is of the opinion that in some cases in which definite changes are found in the tympanic cavity the disease begins in this way. In support of his view Habermann points out that the foci of the disease in the bone of the capsule of the labyrinth tend to group themselves round the blood-vessels which pass inwards from the periosteum of the tympanum to the bone. Katz also draws attention to the fact that this would account for the occasional occurrence of the disease in other parts of the temporal bone, such as the hammer and anvil. It will be pointed out later, however, that both these facts can be accounted for in quite a different way than that suggested by the writers mentioned. A very potent argument against the hypothesis put forward by these investigators is the fact that the disease is most often found without any evidence of present or past inflammation in the tympanum, and furthermore, foci of diseased tissue are found at points remote from the tympanic cavity and not in direct

communication with the periosteum of that cavity. Finally it should be pointed out that there is never any evidence of inflammatory action in the bone, which we would expect if the disease were the result of inflammatory changes in the tympanum.

Siebenmann⁽¹²⁾, as the result of his very careful investigations into the anatomical conditions, is of the opinion that the affection does not arise either in the periosteum or in the bone itself but in the cartilaginous layer of cells which lies between the original labyrinthine capsule of early life and the bone which is formed in the connective tissue of the skull and which ultimately surrounds the true capsule. He holds that the disease under consideration is a last phase in the general development of the bones of the body, a phase which is normal in the other bones but abnormal in the temporal bone.

Siebenmann's hypothesis has this important feature to recommend it to consideration; it accounts for the undoubted fact that there is throughout no sign of inflammatory action whatever. This objection is a strong argument against the view of Habermann, and, as will be seen later, also against that of Politzer. There are, however, great difficulties in the way of accepting the hypothesis suggested by Siebenmann. In the first place it does not at all explain the very important involvement of the cartilage of the stapedio-vestibular articulation. It is quite conceivable that the cartilage cells which remain in the mass of the petrous portion of the temporal bone should undergo absorption and be replaced by bone in the way which occurs in normal osseous tissue, but that this process should occur in the cartilage of the joint is in the highest degree improbable. Indeed, it might be denied, without being too dogmatic, that such an occurrence is impossible unless we are willing to change our fundamental principles of physiological and pathological processes.

Politzer's⁽¹³⁾ view of the disease is that it is an affection of the bone itself—an osteitis—and is independent of disease either of the periosteum, of the tympanum, or of the mucous membrane of the tympanum, or of the cartilage cells of the temporal bone. In other words, it is an inflammation of the bone itself. The obvious objection to this, as to most of the other views put forward, is that in the first place it does not explain the fact of the entire absence of any signs of inflammatory action throughout the whole course of the disease, whether studied from a clinical or a pathological point of view. Above all, it does not explain the peculiar sharp line of demarcation between the new-formed spongy bone and the whole compact

bone around. The bilateral nature of the disease is also unfavourable to this view.

It has occurred to the writer that the incidence of the disease under consideration may be explained in a way quite different from those which have just been described.

Let us consider for a moment the salient features of the disease. It is very rare or practically unknown under puberty. It is almost uniformly bilateral, although one ear frequently suffers first and either may be the more seriously affected. It is rather more common in women than in men. It appears to a certain extent to be hereditary, but to judge from my own experience this is not such a common feature of the disease as one would expect after consultation with the text-books. There is no single general bodily condition to which the disease can be attributed, but several constitutional conditions seem to favour its development and certainly make it worse when once it has begun. Of these general bodily conditions the following are recognised: anæmia in any form, rheumatism, syphilis, pregnancy, gout. The anatomical features of the disease are: The absorption of small portions of compact bone and cartilage over an area or areas marked off by a sharp line of demarcation, the deposit of new-formed spongy bone in this area, and finally the gradual transformation of this spongy bone into compact bone. Where the cartilage has been destroyed it is replaced by bone. Finally it must be remembered that throughout the whole course of the disease there is never any sign of inflammatory action.

Now, considering first the anatomical changes which occur without reference to the particular local conditions, it might be well to ask, What would a pathologist suspect if he found such a combination as a sharp line of demarcation, absorption of the tissue within that line of demarcation, and the subsequent laying down of new-formed tissue similar to that which has been absorbed? These facts are to be taken in association with the other important fact that throughout the whole course of the disease there is no sign of inflammatory action. Speaking as a pathologist, I have little doubt that I would suspect that there had been death of the tissue within the line of demarcation, and that the dead tissue was in process of absorption, infection not having occurred. The laying down of the new tissue similar to that which has been absorbed is, of course, the common law in pathology. In the opinion of the writer this really is the explanation of the occurrence of the disease. For reasons which will be given later the circulation in

the minute vessels of the bone is very apt to become sluggish or to cease altogether for a time. It is very possible that thrombosis may even occur in the blood-vessels or capillaries referred to, and in either case the portion of bone supplied by the particular vessel would no longer be nourished and would die. Not being infected, the dead piece of bone would become surrounded by a line of demarcation and then be absorbed in the usual way, with the coincident laying down of new-formed bone which, as is always the case, is spongy at first and only becomes compact later.

The view expressed briefly above explains several peculiarities of the disease. In the first place, it explains the sharp line of demarcation between the new-formed spongy bone and the old compact bone. This line is quite comparable to the line of demarcation which forms in a gangrenous limb or the equally sharp line which defines the limits of an infarction. The remarkable absence of any signs of inflammatory action throughout the course of the disease is also explained by the theory given above. The important practical feature of the disease—that is, the fixation of the stapes in the oval window by bony growth—is readily explained on the suggestion given by the writer. The cartilage of a joint is nourished by imbibition from the underlying bone. When therefore the bone on which the cartilage rests is dead, the cartilage itself dies. Hence the important feature of the disease from a practical point of view. The dead cartilage is never restored, but its place is taken by the new bone which is being formed in place of the old bone which supplied it with nourishment. Hence, I think, the explanation of the fact that in the majority of cases of fixation of the stapes the points at which the bridges of bone most frequently appear are along the anterior and superior margins of the bone—that is to say, at the part of the joint which lies nearest to the point of election of the disease in the bone itself.

But it may be asked, Why should the bone die so readily? At first it might appear that this would be a difficult question to answer, but a little consideration will show that there is a very good reason why the circulation should be carried on with risk in bony tissue and particularly in the bone which surrounds the labyrinth. The conditions of the circulation of the blood in the bone are different from those in any other of the tissues in one respect. The walls of the vessels in bone cannot collapse, and therefore when the force of the circulation is not strong enough to drive the blood through them the latter must stagnate. In the

soft tissues, on the other hand, there is no necessity for this alternative, for if the force of the heart is not enough to drive the blood round the capillaries the atmospheric pressure comes into play, and the tissues diminish in bulk by the amount of blood which has been driven out of them. There is, of course, another factor in the case of the soft tissues—that is, the muscular coats of the smaller arteries, which may contract as soon as the blood-supply diminishes. The arteries of the bone have no muscular coats, and it would not avail them even if they had, for the walls of the vessels are so tightly bound to the bone itself that the muscular fibres could not possibly produce any diminution of the calibre of the vessel. We see, therefore, that the blood can be kept from stagnating in the smaller vessels of bone by two forces only—the action of the heart from behind, and the suction action of the respiratory movements acting through the jugular vein from in front. It is doubtful if the latter can be of very much avail in the case of the capillaries of the temporal bone; in any case, it must always be a very insignificant factor in the matter. There is, indeed, only one really active factor, and that is the contraction of the left ventricle. Unless the blood is driven through the capillaries of the bone by this force it will stagnate, and may undergo coagulation if any disturbing factor should exist or if the stagnation is unduly prolonged.

Now, while this is the case in all the ordinary bones of the body, it is more particularly true in the case of the temporal bone, for the obvious reason that the Haversian canals are much narrower in diameter than in any of the other bones of the body. Therefore, while the force to drive the blood through the vessels is the same for the temporal as for the other bones, the amount of friction to be overcome is much greater in the case of the former, and stagnation is therefore much more likely to occur. It is, of course, well known that the blood will not coagulate, even in an indefinite time, in a vessel so long as the condition of the vessel-wall remains healthy. But under the circumstances we are considering just now, it is in the highest degree improbable that this condition of health of the wall would be present, for it also would not be supplied with healthy blood, and if in consequence it died, the blood contained within would coagulate at once. The thrombus having thus once formed, the rest follows as a matter of course. The blood cannot now get to the small surrounding portion of bone, and the latter dies and is absorbed in the usual way. The laying down of the new-formed bone is, of course, coincident with the absorption of the old.

In fact, the appearances are exactly those which we find in the case of osteoporosis.

It will naturally be understood that there may be certain local and general conditions which favour the occurrence of the pathological changes in the way suggested by the writer. Thus it may be that certain individuals or even families may have rather narrower capillaries in the bone than others. Or it may be that the differences in the viscosity of the blood are enough to account for the various degrees of liability to the disease. So also various general conditions, such as anæmia, may favour the stagnation of the blood in the capillaries, or other diseases may favour the occurrence of the coagulation of the blood on the capillaries or smaller arterioles. Pregnancy, which has been looked upon as a cause of the disease, may be included under the same class as anæmia, since according to the views of the gynecologists the condition of the blood in pregnancy is similar to that which is found to be the case in chlorosis. Of all the general conditions which seem to favour the onset of the disease, anæmia is in the writer's experience by far commonest. If aurists would remember to ask the patient the condition of health in which he or she was, not when they see the patient, but when the affection began, they would find that in the great majority of cases among the female sex the disease begins when they are chlorotic.

It will, however, be inferred from the writer's statements that we must not look for one single general cause in the production of the local disease. Any general disease which affects the circulation unfavourably or produces alterations in the coats of the blood-vessels of the bone, or affects the viscosity of the blood, may be factors in the production of the disease. Thus it is easily conceivable that in one case chlorosis, in another syphilis, in another rheumatism or gout, may be the constitutional fault.

Again, it will now be quite conceivable that affections of the muco-periosteum of the tympanum may conduce to the occurrence of the disease. The cicatricial contraction of the tissue might act upon the smaller arterioles just before they penetrate the bone, and diminish the force of the blood-current. This would predispose to stagnation of the circulation in the bone and bring about the result described above.

But whatever the general conditions may be that give rise to the disease, the present writer wishes more particularly to suggest that the essential pathological basis of the disease is the death of circumscribed portions of bone and cartilage followed by the absorp-

tion of the same portions and by the deposit of new spongy bone to take the place of the bone and cartilage which has been absorbed. It appears to him that the anatomical changes which are found and agreed upon by all are best explained by that suggestion.

1. MORGAGNI.—“De Sedibus et Causis Morborum,” 1767.
2. VALSALVA.—“Tract. de Aure Humana,” chap. ii, x, s. 22, 1742.
3. MECKEL.—“Inaug. Dissert.,” Halle, 1777.
4. TOYNBEE.—*Med.-Chir. Trans.*, 1849, p. 69; 1855, p. 1.
5. VOLTOLINI.—*Monatschr. f. Ohrenh.*, 1876, s. 150.
6. KATZ.—*Arch. f. Ohrenh.*, Bd. liii, s. 68.
7. GRAY.—*Brit. Med. Journ.*, October, 1905.
8. HABERMANN.—*Arch. f. Ohrenh.*, Bd. lx, s. 37.
9. *Ibid.*
10. KATZ.—*Loc. cit.*
11. SCHEIBE.—*Verhandl. d. Deutsch. Otol. Gesellsch.*, Breslau, 1901.
12. SIEBENMANN.—*Zeitschr. f. Ohrenh.*, Bd. xxxiv, s. 356, and s. 291.
13. POLITZER.—*Zeitschr. f. Ohrenh.*, Bd. xxv, s. 309.

DISCUSSION.

MR. L. A. LAWRENCE, in discussing the diagnosis of fixation of the stapes, disputed the accuracy of the three symptoms on which the diagnosis was usually made—viz. a negative Gellé's test, paracusis, and increased bone-conduction. The objections taken to Gellé's test were, first, the plugging of the meatus; secondly, the placing of the tuning-fork on the bone. With regard to paracusis, the old definition was the ability of a deaf person to hear better in a noise. Mr Lawrence thought it was not noise but the vibration which caused the noise that gave rise to the increased hearing. He thought it would be found as a rule that people with paracusis heard better in a hansom cab with silent tyres than in one which had iron tyres. In a train the same person heard better when in the open, but worse when the train was passing through a tunnel. In both these cases the added noise due to the iron tyres and the tunnel did away with a large part of the extra hearing. Some members of the Society who had consulting-rooms abutting on a road without a wood paving would surely recognise the effect of noise in diminishing the hearing power of nearly all their patients if they tested them during the passage of some heavy traffic. If increased hearing was thus caused by physical vibration, clearly there must be something inside the ear capable of being shaken and moved. Now, the only movable adjuncts which he knew were the chain of bones and the organs in the inner ear. These latter might be left out of consideration, as no observer

had ever brought them forward as being at fault. There remained only the chain of bones. If the shaking up of this could produce a return of hearing, clearly the stapes could not be fixed, and therefore he thought that paracusis with regard to the diagnosis of fixation of the stapes showed mobility rather than fixation. As regards increased bone-conduction, he did not think any one had yet brought forward adequate grounds for explaining the phenomenon or for showing any connection between it and fixation of the stapes.

Dr. DUNDAS GRANT said the subject for debate was what one speaker had already spoken of as one of the darkest subjects in otology, and he had no doubt many, especially in the beginning of their career, had felt, as he himself did, the hopelessness and despair in seeing certain patients, not the least attractive of one's clientele, who were the subjects of that affection, namely, otosclerosis or fixation of the stapes. That condition was comparatively frequent in young women. It was of the greatest interest to him to hear Dr. Gray propound his theories, because that gentleman's remarks so completely explained conditions which had somewhat perplexed him (Dr. Grant), and which were present in certainly one class of case. There were, no doubt, many classes of cases which, from the otological point of view, it was necessary to differentiate as far as possible. The otosclerosis of young women was one very definite class. He believed it to be associated with an enfeeblement of the circulation, and the patients were usually those to whom one applied the term "chlorotic." In many of them there were some of the signs of osteoarthritis, sometimes well marked in the individual, sometimes in the female progenitor, or it might be that some of the less pronounced prodromic signs pointed out by Luff and Ballantyne, such as a clammy coldness of the extremities, were there when the pronounced signs were as yet absent. He dwelt upon such a point in etiology because he thought the difficulty connected with the future operative treatment of the condition—if there should be a future operative treatment—would depend upon whether the cause of the progressiveness of the disease was discovered. If the disease were simply a finite fixation, one might carry out such plans as those propounded by Panse or by Milligan, or other progressive aural surgeons, with some hope. But the discouraging feature about the condition was its tendency to progressiveness, even though this did not always show itself. It, therefore, differed from simple fixation due to some accidental process. For that reason he pleaded for a careful investigation

into the etiology of cases, and Dr. Gray's explanation helped one a long way in that direction. He believed Gellé's was a very valuable test, and offered a strong confirmation, other things being present, of the fact of the stapes being fixed. There were certain difficulties with regard to it. Mr. Lawrence had pointed out some of them, and lack of understanding on the part of the patient might make a great difficulty; a "negative" result of Gellé's test was probably valueless in cases of fixation of the malleus or of considerable relaxation of the tympanic membrane. He considered that the difficulty pointed out by Mr. Lawrence in regard to plugging the meatus was not a very serious one, because one tested the dying away of the sound of the tuning-fork while the meatus was plugged up and tested it again while compressing the Politzer bag, the ear being again plugged; we thus compare like with like. The only effect of the plugging was to lateralise the sound in the ear which it was desired to test. So far as he had looked into the results of Gellé's test in his hands, he was distinctly of the opinion that the prognosis was materially worse in cases in which Gellé's test was negative. But there was, however, an hiatus in his experiments with it, because he had used it chiefly in those cases where he thought beforehand there was likely to be fixation of the stapes. He had not applied it indiscriminately to cases in order to find out with what regularity the test was positive in other conditions. To the view that the stapedo-vestibular synchondrosis or joint might be liable to osteoarthritis, it had been objected that it could not be osteoarthritis in the ordinary sense, because the joint had no synovial membrane. He admitted there was much force in that, and that it was those joints having synovial membrane which were much more open to infection than others. But he took his difficulty to a gentleman who was perhaps one of the leading authorities, and he said he did not think the absence of synovial membrane was at all an objection. Some authors had taken exception to the term "ankylosis of the stapes" altogether, because it postulated that there was a joint there, whereas it was not, properly speaking, a joint, and therefore it should be called a synostosis. This change in nomenclature might be worth discussion. Another alteration in nomenclature was that mentioned by Mr. Lake, the application of the term "vestibule" to the niche for the fenestra ovalis, but the term "vestibule" was already employed for the cavity on the labyrinthine side. Another point which had not been mentioned was the flamingo-red crescent referred to by Schwartze, which in his (Dr. Grant's) experience was absent in many cases but present

in some. No doubt the significance of that crescent was that there was a congestion on the surface of the promontory, and that it was seen through the tympanic membrane in so many cases of synostosis of the stapes because the tympanic membrane preserved all its transparency. He concluded by expressing his great regret at the absence through illness of Mr. Lake.

Mr. MACLEOD YEARSLEY desired to emphasise the importance of more careful and accurate work with regard to tuning-fork tests amongst otologists. Very often one heard notes read of cases in which the tuning-fork tests given were most meagre. He especially emphasised the necessity of a greater uniformity of tuning-fork tests and for reporting them; it would even be worth while for the Society to take up the matter, and, if possible, formulate some system which could be universally adopted. He supported Mr. Lake's remark as to the great improvement in cases of fixed malleus alone which could be gained by mobilisation. Possibly a very fair number of cases might be met with in which deafness was very largely due, or almost entirely due, to the fixation of the malleus, possibly to some superficial contraction of the tensor tympani tendon. Those who had carefully dissected fresh specimens would have noted that that tendon was inserted into the bone with a small fan-shaped expansion running downwards, and it had often occurred to him that a cicatricial contraction following inflammation of that tendon might help very largely to fix the malleus. A case which he saw at the Royal Ear Hospital a few weeks ago was that of a man, aged forty-five, with fixed malleus. He could not take the tuning-fork tests, on account of the noise in the room, but he was tested roughly about five minutes before gas was given him and his malleus mobilised. A voice could be heard at 2 feet, a whisper at 6 inches; the watch was not heard at all. Five minutes after the malleus was mobilised the watch could be heard at 9½ inches, the voice at 4 feet 6 inches, and the whisper at 1 foot 6 inches. That illustrated the improvement which could be gained by simple mobilisation of the malleus. Another point in which he supported Mr. Lake was with regard to the red iodide solution. He had found, as Mr. Lake had, that it improved a good many cases which had paracusis Willisii. He agreed with Dr. Dundas Grant that the pink blush was absent in many cases, and when it was present it was more likely to be over the promontory. He remembered a case of Mr. Lake's in which the salmon-pink blush on one side was over the promontory and on the other side over the region of the stapes. In that case the side where it was

over the region of the stapes did not improve, but the other side did somewhat improve under treatment. With regard to the amount of bone-conduction, his own experience was that a *plus* bone-conduction was fairly common in early sclerosis. He presumed that was due to acoustic hyperæsthesia, probably caused by the irritation of the process going on in the wall of the capsule. A short time ago he saw a very curious case, which he took to be early sclerosis, in which the bone-conduction was markedly increased. The patient was a healthy country girl, aged fifteen. Deafness had been noticed, worse in the right ear, twelve months. But it had only been noticed during the catamenia, according to her mother. There was a drumming tinnitus at that time, of which only a vestige remained in the intervals. During the periods there was also occasional vertigo. There was no paracusis Willisii. He had been unable to obtain any history of trouble likely to lead to deafness. Both membranes were normal; they showed no blush and their mobility was unimpaired. There was very marked carotid pulsation. He tested the patient at the height of a period, and again a fortnight afterwards, and during the period there was + 14 inches on one side and + 12 inches on the other side. Between periods it was + 5 inches and + 6 inches; and he mentioned that as an instance of bone-conduction in early otosclerosis. One other point he would like to draw attention to. There were two classes of case that every otologist must have observed—children and parturient women. One sometimes met with children who were deaf and in whom the removal of adenoids resulted in no improvement. And then there was the accentuation of the condition after parturition. Pregnancy did not appear to accentuate otosclerosis, but parturition certainly had that effect. It had occurred to him that valuable light might possibly be thrown on the disease if blood-counts were taken in such cases.

Dr. BARR explained that Dr. Milligan had been compelled to leave to catch his train, but desired him to mention that he had twice done the operation which Dr. Pritchard mentioned as a possibility in the future, namely that of perforating the inner wall of the tympanum and forming a new fenestra. Dr. Milligan grafted the orifices, but the results had been practically *nil*, as the hearing and the subjective symptoms remained, after a short period of improvement, pretty much as they were before the operations.

Mr. C. E. WEST, referring to Dr. Milligan's cases, said that about a year ago he operated upon a woman aged forty-five to fifty. She was very deaf on both sides, and was very anxious to hear and

ready to have anything done. She had a complete operation done and then the promontory was opened, and, as one so often saw in any fresh *post-mortem* specimen, if one scraped through the bone carefully, the lining membrane, or periosteum of the labyrinth, formed a diaphragm across the opening in the bone. No perilymph was seen, and he did not graft it, but left it as it was. It behaved like a post-aural operation; there was never suppuration, and it all healed. But at the end of the time the condition was the same as before. As in Dr. Milligan's cases, she heard better during the process of healing than she heard either before the operation or after the healing. Her hearing was so good during the healing that she could make out a good deal of the sermon preached in the ward. He still saw the patient occasionally, and she was no better than at first. There was a firm, shiny scar over the whole inner wall of the cavity, and one could not see where the promontory was attacked. He could not say whether the hole was filled up by bone.

The PRESIDENT said he thought all would agree that exceedingly valuable papers on the subject had been read; he did not believe there was much known on the subject that had not been laid before the meeting. The cordial thanks of the members were due to the readers, and perhaps especially to Dr. Albert Gray, who had brought forward matter which was pregnant with thought for the future guidance of otologists. Dr. Gray had mentioned several things he (the President) had not known before. His suggestions on the possible causation of otosclerosis were particularly valuable. He (the President) had nothing special to say on the subject, but he thought the British otologists should be defended from the observations of Dr. Barr, that "the names of British otologists were conspicuous by their absence" from the literature on this subject. Owing to public opinion, *post mortems* could not be obtained in this country as readily as on the Continent, and it was not that British workers in this field were not as earnest as their continental brethren, but their opportunities of following their clinical knowledge into the *post-mortem* room were extremely limited. With regard to Gellé's test, he considered it extremely unreliable; whether due to the inaccuracy of the patient tested or the inaccuracy of the test itself he could not say. He had obtained most contradictory results by its use and he had ceased to have any faith in it.

Abstracts.

NOSE AND ACCESSORY SINUSES.

Delneuveville, E.—*A Case of Sphenoidal Sinusitis with Ocular Complication.* "La Presse Oto-laryngologique Belge," January, 1906.

A man, aged forty-six, observing that his sight was becoming impaired, applied to the author for suitable glasses. The vision of his left eye was found to be half the normal, while with the right eye fingers could hardly be counted at the distance of one metre. The media and fundus were intact, but there was a central scotoma for colours. A diagnosis of retro-bulbar neuritis was made.

The patient admitted that he had a slight frontal headache and that for some time he had suffered from a chronic nasal catarrh. The nasal cavities, especially the right, were full of pus, the origin of which was traced to the sphenoidal sinuses. Under treatment by nasal irrigations and inhalations of menthol the sinus affection was cured in about two months and the vision was greatly improved. Hypodermic injections of strychnine were then administered daily, and the sight gradually returned to the normal standard.

Chichele Nourse.

Van den Wildenberg.—*A Contribution to the Anatomy of the Accessory Sinuses of the Nose.* "La Presse Oto-laryngologique Belge," March, 1906.

A communication to the Belgian Society of Oto-rhino-laryngology, being a description of two anatomical specimens.

One preparation showed a large ethmoidal cell, situated behind the frontal sinus, with an opening into the hiatus semilunaris on the inner side of the orifice leading to the frontal sinus.

The other preparation showed a right maxillary antrum completely divided into two chambers by a cartilaginous partition, running downwards and backwards. The upper cavity contained the ostium maxillare as well as an accessory ostium, but in the lower cavity no orifice of communication with the nose could be found.

Chichele Nourse.

Coffin, Rockwell (Boston).—*A New Gouge for Submucous Operations in the Nose.* "Boston Medical and Surgical Journal," February 22, 1906.

This instrument is five inches long and has a cutting edge overhung by a guard. The author describes his method of operation, and claims for it the following advantages: (1) The rapidity with which the submucous thickenings can be removed; (2) safety; (3) rapid healing with little or no curetting; (4) ease with which broad, flat thickenings can be removed, which could not be engaged with the saw.

Macleod Yearsley.

Spear, Edmund D. (Boston).—*Photophobia: A Nasal Reflex.* "Boston Medical and Surgical Journal," March 1, 1906.

The author thinks that when a bright light induces sneezing the nose, and not the eye, is at fault. He cites the case of a boy who could not bear bright lights because he had hypertrophied middle turbinals.

Macleod Yearsley.

LARYNX.

Rudolf Landesberg.—*A Piece of Cartilage Impacted in the Pyriform Fossa.* "Monatsschrift für Ohrenheilkunde," December, 1905.

The patient was a man, aged sixty-three. When first seen he had been suffering from great pain on swallowing for a month. The pain radiated to both ears and made the swallowing, even of fluids, a matter of great difficulty; there was considerable dyspnoea. The pharyngeal mucous membrane was congested, the epiglottis much thickened, especially on the right side, the pyriform fossa was filled with a motionless, uneven tumour, and the right arytenoid cartilage, aryteno-epiglottidean fold, and ventricular band were much swollen. Only the extreme edge of the right vocal cord was visible. The right half of the larynx was immobile. Some small glands could be felt at the posterior edge of the sterno-mastoid. A diagnosis of malignant neoplasm, probably sarcoma, was made. A small piece of the right ventricular band was excised and examined histologically, but only normal tissue was found. The patient went home, but returned four weeks later. The pain was now very acute. The swelling of the right side of the larynx had much diminished, but the pyriform fossa was covered with a greenish-brown slough, which extended on to the right pharyngeal wall. A very offensive odour escaped from the patient's throat. With a pair of forceps a fetid piece of necrotic tissue was removed, exposing a cylindrical body, which when removed proved to be a piece of cartilage (2 cm. \times 3 mm.). The patient felt at once relieved and lost his dyspnoea. The septic inflammation of the pyriform fossa continued for some time, with occasional acute swelling of the right side of the larynx. A few days after the operation there was a very severe hæmorrhage from the pyriform fossa. Ultimately the patient made a good recovery; the right vocal cord, however, remained immobile, and some thickening of the arytenoid cartilage and the ventricular band persisted.

Knowles Renshaw.

Saunders, E. W. (St. Louis).—*A Plea for the more timely use of Intubation in Laryngeal Stenosis, and for the use of Tracheotomy in certain Neglected Cases.* "Archives of Pediatrics," February, 1906.

The author grounds his plea regarding intubation upon the dangers (1) of pseudo-membrane, (2) of swelling of the tissues, (3) of laryngo-spasm, (4) of retained secretions. Tracheotomy, he thinks, should be performed in "unrelenting spasm of the glottis," in tracheal or tracheo-bronchial diphtheria, in cases with extensive membrane in the fauces, and in cases apparently moribund.

Macleod Yearsley.

EAR.

Delstanche, E.—*Mastoiditis and Furunculosis.* "La Presse Oto-laryngologique Belge," March, 1906.

Two cases with similar symptoms are contrasted—one an abscess in the soft parts covering the mastoid process, not connected with disease of the ear, the other a case of acute mastoiditis.

The diagnosis in such cases is sometimes doubtful until a mastoid incision is made, which shows the real condition. Chichele Nourse.

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**CASE OF INOPERABLE CANCER OF THE FAUCES, THE
PHARYNX, THE TONGUE, AND THE CERVICAL GLANDS
THAT HAS SHOWN MARKED AMELIORATION AFTER
TREATMENT FOR TEN WEEKS WITH A BACTERIAL
VACCINE OF NEOFORMANS.¹**

BY SCANES SPICER, M.D.,
Surgeon, Throat Department, and Lecturer on Diseases of the Throat,
St. Mary's Hospital, London; and

PROFESSOR A. E. WRIGHT, F.R.S.,
Pathologist to St. Mary's Hospital, London.

THE patient, a Balaclava veteran, aged seventy-five, was sent to the Throat Department of St. Mary's Hospital in March, 1906, by Dr. W. T. Evans for an ulcerating growth in the throat and enlarged glands in the neck. The tumour occupied the site of the left tonsil, the faucial pillars, the side of the tongue, and extended down the wall of the pharynx. It blocked the faucial isthmus sufficiently to prevent laryngoscopy even with the smallest mirror, but there was no affection of phonation or respiration. The tongue could not be extruded. The surface of the growth was studded with bloated fungous granulations imbedded in copious brownish-yellow foetid fluid on an ulcerated purplish base; there was a large mass of swollen hardened glands behind the angle of jaw. There was considerable dysphagia and much pain in the left side of the head and the ear, on trying to swallow. He had lost much weight lately but could not say how much. The case was diagnosed as malignant and inoperable—a view in which

¹ Communicated to the Laryngological Society of London, June 1, 1906.

Mr. A. J. Pepper concurred. A portion of the growth was removed from the tonsillar area. Iodide of potassium, gr. xv three times a day, and an antiseptic gargle were given for a week. As no improvement was observed this was stopped; and the Pathological Department having reported that the growth was a spheroidal-celled carcinoma, the patient was sent to the Inoculation Department with a view to treatment by a bacterial vaccine by Professor A. E. Wright. This was carried out as shown by the accompanying chart indicating the doses, intervals of injection, and the opsonic reaction of the blood. The condition of the fauces and the glands was regularly and carefully observed by Dr. Scanes Spicer. The favourable changes commenced at once and continued to increase for five or six weeks, after which there was no further improvement, but no regression. The patient lived at home, and walked to the hospital for treatment. The changes observed were—(1) diminution in the size of the faucial mass, so that laryngoscopy became possible; (2) lessening of the ulcerated surface, and the unhealed part looking like a healthy granulating surface; (3) disappearance of the bloated granulations; (4) loss of fœtor; (5) disappearance of dysphagia and pain in the throat; (6) the tongue became less rigid; (7) the external mass shrunk down enormously, leaving one small hard gland. No other treatment was used. Whenever the opsonic power was low the patient invariably complained more of head pains. No opinion was tendered as to whether the treatment had influenced only secondary ulcerative and septic processes or the malignant substratum itself, nor did it seem determinable what were the proportions which these factors bore in the sum total locally. The whole improvement was nevertheless marvellous both locally and in the patient's general condition, and the case was of good augury for the influence of the method. A cure was not claimed, and the patient was shown as still under treatment in case unfavourable changes should supervene before next session. The clinical record was incomplete, but the history and stigmata of syphilis were negative.

REMARKS EXPLANATORY OF THE TREATMENT.

By PROFESSOR A. E. WRIGHT, F.R.S.

PROFESSOR A. E. WRIGHT said that he had gladly come in response to Dr. Scanes Spicer's invitation to explain to the Society the rationale of what had been done in connection with the treatment of this case.

Dr. Doyen, as was well known, had asserted that there could

be obtained by culture from all, or practically all, new growths—whether of a malignant or a non-malignant nature—cultures of a characteristic microbe. This microbe was, by Doyen, regarded as the specific cause of cancer on the ground that it produced in his hands when inoculated into rats neoplastic lesions. It was accordingly named by Doyen the *Micrococcus neoformans*. While those who have seen Doyen's sections of the lesions obtained by him in rats by the inoculation of cultures of his *Micrococcus neoformans* do not, so far as I know, agree in the view that the lesions he produced were of the nature of new growths, there can be no doubt of the singularity of the pathological changes which are here in question. In specimens given to me by Dr. Doyen the whole upper lobe of the rat's lung has been converted into a mass of cartilage. Here and there through the rest of the lung are scattered large masses of embryonic cells—perhaps only scar-tissue. Interspersed with these are masses of epithelial tissue somewhat resembling adenomata—possibly only large epithelium-lined diverticula taking origin from the bronchi. However this may be, Metchnikoff first, and after him many others—including some of my fellow-workers at St. Mary's Hospital—have confirmed Doyen's statement that a characteristic microbe—the *Micrococcus neoformans* can be obtained by culture from tumours. The microbe in question has a superficial resemblance to the staphylococcus. It differs from it, however, in the following particulars:

(1) When first taken from the body it gives only very sparing cultures on ordinary agar.

(2) In film preparations it is arranged, not in clusters like the staphylococcus, but in short chains, and in particular in Y-shaped figures—i. e. in short bifurcating chains.

(3) It is agglutinated by normal human serum,¹ even when this has been diluted two hundred or more times.

(4) The *Micrococcus neoformans* can be further differentiated from the staphylococcus by the fact that a blood which possesses—whether as a result of artificial or auto-inoculation—a high opsonic power with respect to the *Micrococcus neoformans* may possess a low opsonic index with respect to the staphylococcus; and *vice versa*.

¹ The fact that some of his cultures of the *Micrococcus neoformans* were agglutinated by normal serum is incidentally noted by Karwacki (*Centralblatt für Bakteriologie*, vol. xxxix, (Originale), p. 369, 1905) as a complication which presents itself in connection with the appreciation of the value of the agglutination obtained by him with the blood of cancer patients. The fact that the *Micrococcus neoformans* is agglutinated by every normal human serum while the staphylococcus is not so agglutinated appears to have been overlooked by this observer.

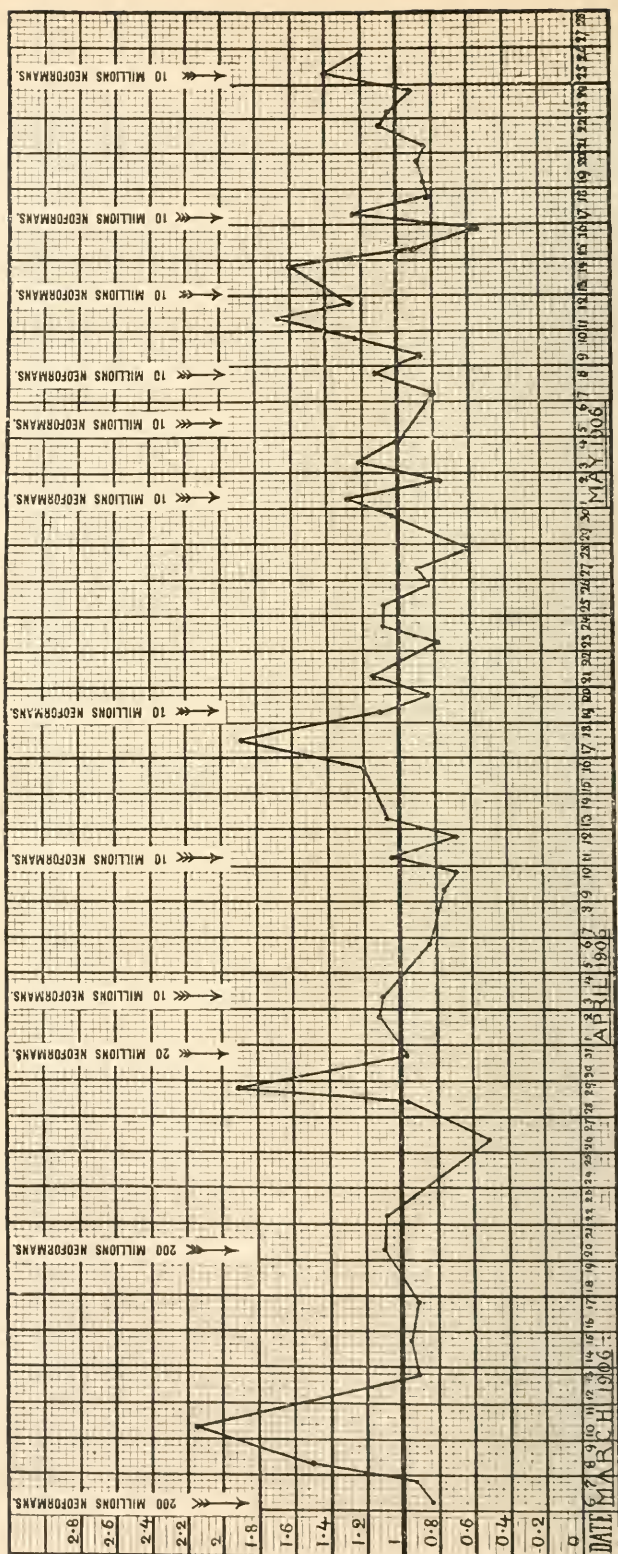


Chart to illustrate Professor Wright's remarks explanatory of the treatment of Dr. Seamus Spicer's case of inoperable cancer of the fauces.

A scientific basis for the differential diagnosis of the *Micrococcus neoformans* having thus been obtained, and having verified by these means that a culture of the *Micrococcus neoformans* supplied by a Belgian observer—Geets—corresponded in all respects with two cultures¹ obtained by us at St. Mary's; we have recently begun to address ourselves to the task of investigating the opsonic and agglutinating power of the victims of malignant disease with respect to the *Micrococcus neoformans*.

It will suffice to say with respect to the agglutinating and opsonic powers of the victims of malignant disease that these differ from the normal (1) in the fact that they are lower and in others much higher; (2) in the fact that the opsonic index is in some cases constantly fluctuating as it does in cases of bacterial infection which are associated with constitutional disturbance; and (3) in the fact that phagocytosis is in some cases obtained with the serum after it has been heated to 60° C. for ten minutes. We have here, it seems to me, ground for concluding that infection by the *Micrococcus neoformans* is one of the factors which must be reckoned with in connection with malignant disease.

The case Dr. Scanes Spicer has shown to you is one of a first batch of five cases in connection with which we have undertaken inoculations with a vaccine consisting of a sterilised and enumerated culture of the *Micrococcus neoformans*.

It is the only case in which we have had a striking result. Of the other four cases two have already died. Of the two others one appears to be quite stationary, while the other shows marked signs of improvement.

¹ The first of these cultures was obtained by Dr. Loveday from the interior of a breast amputated for carcinoma, the second by Dr. May from the discharge from an ulcerated surface of an epithelioma in the glands of the neck, secondary to epithelioma of the tongue.

SOME POINTS IN THE DIAGNOSIS OF THE COMPLICATIONS OF TEMPORAL BONE DISEASE BASED UPON A STUDY OF 135 FATAL CASES.¹

By A. L. WHITEHEAD, M.B., B.S.(Lond.),

Aural Surgeon to the General Infirmary at Leeds; Lecturer in Clinical Otology to the University of Leeds.

ISOLATED cases of intra-cranial suppuration which have been brought to a successful issue are frequently published, but a careful study

¹ Communicated to the Otological Society of the United Kingdom June 23, 1906.

of the symptoms in these cases is rarely instructive—either the symptoms were of the most obvious character or else the cases recovered by a fortunate association of fortuitous circumstances.

During the last fifteen years 892 cases of temporal bone disease were operated upon at the General Infirmary at Leeds by our predecessors, my colleagues, and myself. Of these cases 146 died.

A study of these fatal cases, where careful *post mortems* revealed lesions in some cases unsuspected during life, or with symptoms rendering a correct diagnosis a matter of the greatest difficulty, presents many interesting features. I regret, however, that I have no very striking conclusions to lay before you.

Of the 146 cases, 11 died from other causes, such as diabetes, cardiac disease, etc. In the remaining 135 cases death was more or less directly referable to the temporal bone disease.

Eleven cases died from exhaustion; 10 of these were wasted infants under one year old; all had very extensive mastoid disease and subnormal temperature after operation, and died of inanition in from ten to thirty days afterwards. In two of these cases necrosis of the labyrinth was found. The eleventh case was two and three quarter years old, and had chronic diarrhœa, with acute mastoid abscess, associated with vomiting, rigors, retraction of neck, drowsiness, and constipation. She was almost moribund on admission to the hospital, revived under stimulants, but died of shock at the completion of an extensive operation. Nothing abnormal in the brain or elsewhere was found at the *post mortem*; a culture of the pus gave no growth. In this case the symptoms pointed to intra-cranial suppuration, and it was necessary to explore the brain; the prolonged operation undoubtedly proved fatal, but a less complete operation would not have been justifiable.

In young children with defective stamina it is certainly wiser not to aim at complete removal of all disease at one operation; the establishment of good drainage and the removal of the more serious disease should be accomplished at the first stage, and at a later period a more complete and satisfactory radical operation performed.

In 2 cases no obvious cause for death was discovered at the *post mortem*. One case, where persistent vomiting, optic neuritis, coma, nystagmus, and conjugate deviation of the eyes were present, I have already reported to the Society.

In the second case two serious and alarming hæmorrhages, with persistent uncontrollable oozing from the whole of the wound in the bone and not at all from the soft parts, were followed by

jaundice, temperature of 102° F., and collapse. The organisms obtained from the pus were streptococci, and anti-streptococcic serum was injected without success. At the *post mortem* no gross lesion of any organ was found. Probably in both cases an acute septic injection caused death.

In 22 cases acute miliary tuberculosis caused a fatal issue; in 18 the meninges were affected and the symptoms those of tubercular meningitis.

In 8 of the 22 cases some other primary forms were present, but in the remaining 14 the temporal bone disease seemed to be the sole focus of infection. Nineteen cases were under two years of age. In every case either symptoms of tubercular meningitis or distinct evidences of general tuberculosis were present before operation, and in no case could the operation be regarded as the originating cause of a general disseminated miliary tuberculosis.

In 5 cases when admitted an ordinary catarrhal pneumonia complicated an acute mastoid disease following upon chronic otorrhœa, the pneumonia proving fatal.

In 3 cases an extra-dural abscess situated over the sigmoid sinus was evacuated during the mastoid operation, death subsequently ensuing from septic broncho-pneumonia.

In 3 cases rigors and remittent temperature had preceded operation, but the sinus was found to contain fluid blood. No septic thrombus or alteration in the vessel-wall was found *post mortem*, although the infection must clearly have been conveyed through the sinus. No uncomplicated case of extra-dural abscess died.

Of the remaining 93 cases, serous meningitis was present in 1, general meningitis in 33, meningitis and sigmoid sinus thrombosis in 10, meningitis and cerebellar abscess in 5, meningitis and temporo-sphenoidal abscess in 6, sigmoid sinus thrombosis alone in 1, with pneumonia in 9, with cerebellar abscess in 7, temporo-sphenoidal abscess and thrombosis of the petrosal sinus in 1, temporo-sphenoidal abscess alone in 8, temporo-sphenoidal abscess and cerebellar abscess in 2, and cerebellar abscess alone in 10.

The accompanying table shows the relative frequency with which the usual symptoms mentioned in the text-books have occurred in each group, and the leading points may be briefly summarised.

In the 17 cases of temporo-sphenoidal abscess intense headache was present in all, vomiting in 13, drowsiness deepening to coma in 10, optic neuritis in 5.

	(Cerebral abscess, 9 cases,	(Cerebral abscess with meningitis, 6 cases,	Cerebral abscess with cerebellar abscess, 2 cases,	(Cerebellar abscess, 10 cases,	(Cerebellar abscess with meningitis, 5 cases,	Cerebellar abscess with sinus throm- bosis, 6 cases,	Sinus throm- bosis, 1 case,	Sinus throm- bosis with pneumonia, 9 cases,	Sinus throm- bosis with meningitis, 10 cases,	Meningitis, 33 cases,
Headache										
Vertigo	9	6	2	9	5	5		3	4	21
Vomiting	1	1		2	5	3		3		2
Slow cerebration	7	4	2	5		3		3	6	12
Drowsiness or coma	5			5	1					12
Constipation	6	3	1	6	1	4				9
Subnormal temperature	2	4	2	2	1	1				
High temperature	2	1		2	1	1				
Remittent temperature		5		2	4	3	1	9	10	18
Slow pulse		1		2	1	1	1	9	10	15
Rapid pulse	2	5				1		9	8	12
Slow respirations	2	1				1		9		15
Rapid respirations								6	3	2
Optic neuritis	5			2		1		6		3
Pupil dilated on side of lesion										
Pupils unequal	1					1				3
Paralysis of limbs on side of lesion						1				
Paralysis of limbs on opposite side										
Deviation of eyes to lesion	1	1								2
Deviation of eyes from lesion										2
Strabismus		1							1	1
Nystagmus				2		1			1	3
Knee-jerks absent	3	1				2				2
Knee-jerks increased										1
Retraction of neck				1		1			1	1
Muscular twitchings or contractions										2
General convulsions		1		1	5				7	13
Delirium and mental excitement									10	1
Rigors						2	1	5	5	1
Tenderness over jugular										1
Age under ten										
" between ten and twenty	4	4	1	1	1	1	1	3	4	16
" between twenty and forty	4	2		5	3	3		6	1	5
" over forty	1				1				5	1

In the 9 uncomplicated cases temperature and pulse were subnormal in 2, in the cases with meningitis the rate was much above normal, and in the 2 cases with cerebellar abscess subnormal.

In the 6 cases with meningitis delirium, restlessness, etc., were present.

In only 1 case, and that one of the uncomplicated ones, was the pupil on the affected side dilated and fixed.

In 4 of the 22 cases the patellar reflexes could not be elicited. Sudden death occurred in two of the uncomplicated cases. In *no* case was an acute mastoid abscess present.

One of the cases with meningitis had rigors, and developed a septic broncho-pneumonia.

Among the 21 cases of cerebellar abscess, headache was present in 19, vertigo in 5, vomiting in 13, drowsiness in 11, optic neuritis in 3, subnormal temperature and slow pulse in 3 only, constipation in 4. Rigors occurred twice in the cases with meningitis and twice in those with lateral sinus thrombosis.

In the group with meningitis delirium, restlessness, with muscular twitchings, were a conspicuous feature. Sudden death occurred in 4 of the 10 uncomplicated cases, and in 1 other respiration ceased during the operation, and although the heart was kept going for several hours spontaneous breathing was never re-established.

In 10 of the 21 cases an external mastoid abscess was present.

Pupils were unequal in 1, nystagmus present in 3. The patellar reflexes never exaggerated, in 2 cases not obtainable.

Of the 20 cases of sigmoid sinus thrombosis rigors were present in 14, high and often remittent temperature in all, headache in 7.

Optic neuritis in 5, vomiting in 9. In all the 10 cases complicated with meningitis delirium, restlessness, and muscular twitchings were present.

Of the 33 cases of meningitis headache was present in 21, vomiting in 12, mental excitement and delirium in 16, drowsiness in 9. Muscular twitchings in 12, convulsions in 10, pupils dilated in 2, unequal in 3, optic neuritis in 8, elevated and fluctuating temperature in 21. Patellar reflex increased in 2, absent in 3, conjugate deviation of the eyes from the affected side in 3, towards the side in 2. External mastoid abscess was present in 17.

The absence of the classical symptoms is a striking feature of these cases; this is not due to an omission to note symptoms; in nearly all the cases definite mention has been made when symptoms of intra-cranial complications might have been expected but were absent.

Headache was almost uniformly present in those cases where a brain abscess was present.

Vomiting was very frequently noted, but was absent in half the cases of uncomplicated cerebellar abscess.

Drowsiness or coma were about equally frequent in cerebral and cerebellar abscess.

Optic neuritis was more frequently observed in cerebral than in cerebellar abscess, and was rather remarkably common in the cases of meningitis, being present in 8 out of 33.

Subnormal temperature and slow pulse were comparatively infrequent, being only found in 8 cases of abscess out of 38.

Infection of the sigmoid sinus and meningitis were almost invariably associated with high temperature, and in the former group the usual remittent temperature was found in all but two cases.

The condition of the pupils was rarely an aid to diagnosis; in only 1 case of temporo-sphenoidal abscess was the typical dilated pupil on the side of the lesion present. Conjugate deviation of the eyes was not present in any of the cases of cerebellar abscess, although found in 1 case of cerebral abscess with meningitis and in 5 cases of simple meningitis.

Nystagmus occurred in 3 cases of cerebellar abscess. The patellar reflexes were absent in 4 cases of cerebral abscess and in 2 of cerebellar.

Delirium, muscular twitchings, contractions, or convulsions were almost uniformly present in all the cases where meningitis caused death.

Rigors occurred in 16 out of the 26 cases of thrombosis of the sigmoid sinus, but were never observed in any uncomplicated case of cerebral or cerebellar abscess and in only one case of meningitis.

There was an antecedent history of chronic otorrhœa in 21 out of the 33 cases of meningitis, in 17 out of the 20 cases of sinus thrombosis, in 20 out of 21 cases of cerebellar abscess, in 13 out of the 15 cases of cerebral abscess, and in 1 of the 2 cases of combined cerebral and cerebellar abscess.

The average age of the cases of sinus thrombosis was fifteen, 7 being under ten.

The average age of the cases of meningitis was almost seventeen, 16 cases (nearly half) being under ten.

The average age of the cases of cerebellar abscess was twenty, 3 being under ten.

The average age of the cases of cerebral abscess was twenty-

three, only 1 being under ten, and that was a case of combined cerebral and cerebellar abscess.

Lastly, it is a feature of some interest that external mastoid signs were never observed in association with temporo-sphenoidal abscess, but occurred in about half the cases where cerebellar abscess or meningitis caused death.

SOME FURTHER EXPERIENCES OF THE OPERATIVE TREATMENT OF SCARLATINAL OTITIS.¹

BY A. KNYVETT GORDON, M.B.CANTAB.,

Medical Superintendent of the City of Manchester Fever Hospital; Lecturer
on Infectious Diseases in the University of Manchester.

At this time last year I submitted to this Society the results of an attempt that I had then recently made to deal with certain intractable cases of scarlatinal otitis by the performance of the radical mastoid operation at a somewhat earlier stage than usual. I now propose to describe briefly the results I have had since that time, in order that, if time permits, they may be discussed by this meeting.

May I, in the first place, make a short personal explanation? I find that I am supposed to have advocated last year the performance of the radical operation in the acute stage of scarlatinal otorrhœa. Evidently, in the enforced hurry of the moment, I could not have made myself clear on that point, though I think my meaning is evident if the paper itself be read. What I intended to put forward was that it might be advisable to perform the radical mastoid operation in selected cases before the patient left hospital, instead of waiting several months, or even years, until the temporal bone was extensively diseased. In point of fact, the operation was usually performed in from one month to three months after the onset of the otorrhœa.

I have now performed the radical mastoid operation seventy-one times altogether in scarlatinal cases—that is to say, in fifty-three instances last year. In these fifty-three there has been one death, and in no other case has the operation failed to effect the object for which it was performed, viz. to cure the otorrhœa.

The death was due to the onset of meningitis on the fifth day after the operation; this was found (*post mortem*) to have arisen

¹ Communicated to the Otological Society of the United Kingdom, June 23, 1906.

by lymphatic metastasis, and not by direct extension from the site of the operation.

The remaining cases were all kept under observation in Monsall Hospital until the discharge had ceased for at least a fortnight and the cavity appeared to have thoroughly healed after repeated inspections.

The period at which the operation was performed varied from one to two months after the onset of the otorrhœa. In no case was it undertaken until intra-tympanic treatment had been tried for at least a month without obvious effect. The number of cases of otorrhœa treated was 340, so that the radical mastoid operation was performed in 15.6 per cent.

It is thus obvious that in the majority of cases intra-tympanic treatment was successful. I mention this as it is an obvious criticism of any radical procedure that simpler methods might have sufficed to effect a cure.

The period elapsing between the operation and the cessation of the discharge varied from four to ten weeks: the average time was six to seven weeks.

The operation was performed in the usual manner and the tip of the mastoid was explored in each case and the posterior meatal wall removed as freely as possible. The gouge and mallet were used for the first incision in the bone, but the greater part of the work was done by the gouge alone or by Jansen's forceps; the burr was used but sparingly, and only towards the conclusion of the operation in a few cases. The posterior auricular wound was sewn up in all cases, a small drainage-tube being used at the lower angle for forty-eight hours only. Pure peroxide of hydrogen was used freely during the operation, the cavity being subsequently douched with 1 in 500 izal solution, and then packed with 10 per cent. izal gauze. Reflected limelight was employed during the operation in every case, and the wound was dressed, as a rule, on the third day through the meatus which was purposely made as wide as possible, Ballance's flaps being usually employed for this purpose. Light packing was generally used for a fortnight to three weeks subsequently.

The results as regards hearing have been satisfactory. In no case was the hearing worse after the operation, in the great majority of cases it had improved moderately or slightly, in six a very great improvement took place. For this purpose the observations of the nurses on the patient's condition during convalescence were taken into account as well as the tests made by my colleagues from

time to time, and by myself before the discharge of the patient from hospital. In the majority of the cases a marked improvement in the patient's mental condition, apart from the state of the hearing, also took place. It is evident, therefore, that the performance of the radical mastoid operation at a comparatively early stage does not, as a rule, damage the hearing.

It has been said, however, Why do a radical mastoid at all at this stage? Why not open the antrum simply, and reserve the radical operation for a future period, if necessary? To this I would reply that I have been only concerned with hospital patients of the poorer class. Whenever there has been the possibility of obtaining special advice for children subsequently, and time was no object, I have not hesitated to allow them to leave hospital, with their ears discharging, to be under the care of their usual medical adviser. Especially in this part of the world parents do not believe in the existence of a thing that they cannot see, and advice to take their children to otologists or to an otological clinique is almost invariably ignored.

Then, in scarlatinal otitis there is almost always an inflammation, however slight it may be, not only of the bone immediately surrounding the mastoid antrum, but also of the entire mastoid process right down to the tip. A simple antrotomy, therefore, hardly suffices. It is necessary to remove bone extensively, and I have frequently found sinuses leading from the antrum right to the mastoid tip, and on following these up small localised abscesses in the latter situation. A fairly extensive removal of bone is, therefore, necessary in any case, whether the tympanum be touched or not.

Then, I do not altogether feel satisfied with the results of these antrectomies, and I certainly regard a simple antrotomy as of practically no value at all. During the last year I have performed the antrectomy in thirty-eight cases; in eight it was done as a last resort in the acute stage of hopelessly septic cases, and of these three died of the original toxæmia. In the remainder it was performed for the cure of a local mastoid abscess in fifteen cases, and as a substitute for the radical mastoid operation for the cure of otorrhœa in another fifteen. In these latter the wound took longer to heal than in others where the radical operation had been performed; in all there was marked subsequent deafness, and in five the otorrhœa was not cured.

I am of opinion, therefore, that it is not advisable, at all events where time is of any account, to commence by a preliminary antrotomy or antrectomy. In the bulk of cases careful intra-

tympanic treatment, as I have said, effects a cure; where this fails, and as soon as it is certain that it has failed, I prefer the radical mastoid operation.

In conclusion, I wish to emphasise the fact that in scarlatinal otitis we have an infection of the whole tract, from Eustachian tube to the mastoid cells, antrum, and tympanum, accompanied by a definite osteitis where that tract is bony, and not simply a catarrhal inflammation of the lining membrane of the tympanic cavity. Moreover, the signs of this osteitis of the mastoid, even when it has gone on to suppuration, are often entirely absent clinically. I have during the last year examined the temporal bone in all cases except two that have died from scarlatinal septicæmia, and have repeatedly found pus and carious bone on the mastoid side where there has been no otorrhœa whatever during life. In two cases during the last year this had given rise to pyæmic suppuration in one or more joints, and was only detected at the autopsy, though in all cases a most rigorous watch was kept on the ear and its adnexa while the child was alive.

This being so, it is difficult to regard as adequate the treatment pursued in many fever hospitals, which consists in having the ears syringed by the nurse with one or more antiseptic lotions. The need for the appointment of otologists to fever hospitals is, in my opinion, imperative and pressing. Moreover, the resident staff should be skilled in the ordinary routine procedures of at least elementary otology.

THE MODE OF CONTINUITY OF THE FIBRES OF THE AUDITORY NERVE WITH THE AUDITORY SENSE EPITHELIUM AND WITH THE NUCLEI IN THE HIND BRAIN.¹

BY JOHN CAMERON, D.Sc., M.D.,

Senior Demonstrator of Anatomy, University of Manchester; and

WM. MILLIGAN, M.D.,

Lecturer on Otology, University of Manchester.

THE cochlear division of the auditory nerve in man consists of fibres which arise from the bipolar cells of the spiral ganglion, and pass from there peripherally to the auditory sense epithelium,

¹ A preliminary communication to the Otolological Society of the United Kingdom June 23, 1906.

and centrally to the cochlear nuclei in the hind brain. These fibres are described as ending in arborisations around the bases of the sense epithelial cells, and similarly around the cells in the cochlear nuclei, there being thus no direct anatomical continuity between the various cell-elements. The auditory nerve fibres, together with the cell in the spiral ganglion, compose a distinct neuron system—the peripheral auditory tract.

A large amount of evidence has, however, lately been brought forward to show that there is actually direct anatomical continuity between the various neurons throughout the central nervous system. The present investigation was, therefore, instituted for the purpose of ascertaining whether this new idea could apply to the auditory nerve. This view is certainly supported by the results of degenerative changes in the peripheral auditory tract. Thus Baginsky has shown that after destruction of the labyrinth in rabbits there is atrophy, not only of the auditory nerve, but also of the cells in the nuclei of the hind brain. An almost exactly similar effect follows section of the auditory nerve. These changes are suggestive of a much more intimate connection between the cell-elements than can be explained merely by a system of neighbouring synapses.

We considered that a study of the mode of development of the auditory nerve might afford some idea of the actual mode of continuity. It was found that the cells of the auditory ganglion during the early developmental stages in lower vertebrates constitute a complete chain of communication between the otic vesicle and the hind brain. Both the nucleus and the cell-body of certain cells in the middle of this chain become much enlarged (γ -neuroblasts) and form the auditory ganglion of the adult, but the remainder of the cell-nuclei remain in their relative positions, and constitute the nuclei of the nerve-sheath (β -neuroblasts). It is important to note that only a small proportion of the cells of the embryonic auditory ganglion become constituent cells of this ganglion in the adult. Moreover, their central and peripheral processes do not grow towards the hind brain and the sense epithelium. This connection exists from the early embryonic condition.

The protoplasm of the cells constituting the embryonic auditory ganglion becomes differentiated in a definite manner, so as to form the fibres of the auditory nerve. This consists in the appearance of more deeply staining tracts in this protoplasm. These tracts of differentiation appear simultaneously throughout the

whole length of the embryonic auditory ganglion. Each tract is associated with a large number of the nuclei of that ganglion, which become applied along each side of it. One of these nuclei becomes the nucleus of a cell in the adult auditory ganglion, while the others become the nuclei of the nerve-sheath, as already mentioned. The auditory nerve is thus to be regarded as multicellular in origin, a conclusion which confirms the results of Fragnito, Schultze, Bethe, Apáthy, and others in the case of the spinal nerves.

A direct anatomical continuity of the fibres of the auditory nerve with the sense-epithelium can be readily observed in amphibia; for in this class of vertebrates the bases of the auditory cells are prolonged into fine processes which may frequently be found to be continuous with the delicate fibrils of the auditory nerve, especially if the iron-alum-haematoxylin stain be employed. A similar continuity of the auditory nerve fibres with the cells in the hind brain can likewise be readily studied in amphibia, for the fibres when traced into the substance of the hind brain will be found to blend with the protoplasm of the above cells.

The results recorded in this preliminary communication are mainly founded on a study of amphibian embryos, and we intend to extend our investigations to the other vertebrate classes, mainly with the view of making a comparative study of the development of the auditory nerve.

THE INFLUENCE OF PREGNANCY AND PARTURITION UPON CERTAIN FORMS OF PROGRESSIVE DEAFNESS.¹

By W. MILLIGAN, M.D.,

Surgeon to the Manchester Ear Hospital; Lecturer on Diseases of the Ear,
the University of Manchester.

THE peculiar metabolic changes, both general and local, to which pregnant women are subjected find expression, not only in various reflex aural phenomena of a temporary character, but also in the incidence of certain organic changes, frequently of a progressive and permanent nature.

During the period of child-bearing various systemic disturbances of vaso-motor origin lead to temporary labyrinthine changes, mainly of a congestive type, accompanied by hyperacusis, hyper-

¹ Communicated to the Otological Society of the United Kingdom June 23, 1906.

æsthesia, vertigo, and pulsating or rushing tinnitus. Once the equilibrium of the vaso-motor centres has become re-established with a simultaneous restoration of health these auditory phenomena pass off, leaving no lasting effects. There is, however, another and an entirely different series of changes which are not by any means uncommon and which are of great practical importance, changes which take place either in an ear previously perfectly healthy or in an ear already weakened by catarrhal or oto-sclerotic disease. Every aurist is familiar with the fact that in certain cases of purulent and non-purulent middle-ear catarrh, and in certain cases of capsulitis labyrinthi each successive pregnancy still farther impairs an already weakened organ of hearing. In such cases frequent pregnancies may render the patient so hopelessly deaf as to cause severe mental depression and prevent her from taking any active part in social life. The important question at once arises, to what extent is the aural surgeon justified in warning such patients of the possible evil effects of pregnancy, and especially of repeated pregnancies, upon the organ of hearing, and the problem is still farther accentuated when the patient is a young girl already partially deaf and about to marry. This question has so interested me, and appears to me to be of such importance, that I venture to bring it before this meeting.

Apart from those labyrinthine disturbances due to temporary aberrations of the vaso-motor centres, the prognosis is indeed grave. In many women each successive pregnancy induces an increased loss of hearing, rarely unilateral, almost invariably bilateral. Loss of hearing may in some of these cases be attributed to the general shock which in certain individuals follows a tedious and painful parturition, in others to the presence of an hysterical element, anæmia of the auditory nerve-centres, or to a general toxæmia of pregnancy. The toxæmia of pregnancy is frequently a matter of distinct gravity. So long as all the emunctory organs perform their function adequately, the general economy becomes adapted to its new conditions and toxic symptoms gradually pass off. If, however, any one of the emunctory organs is unable to stand the high pressure at which it is being worked severe toxic infection ensues. Certain vascular changes also take place. There is a tendency to anæmia and to hydræmia. Leucocytosis is well marked, and the amount of fibrin is increased. Such changes, toxic and vascular, contribute materially to nerve-tissue degeneration.

In a recent paper upon "Lesions of the Spinal Cord the Result

of Absorption from Localised Septic Foci," Orr and Rows (*Review of Neurology and Psychiatry*, January, 1906) have shown that lesions of the spinal column can be produced by the ascent of toxins, or in some cases even of organisms, from peripheral foci of inflammation either of an acute or chronic nature. They have further demonstrated that similar changes take place in cranial nerves. In one particular case in which there had been a fœtid discharge from the ear for years, and where the mastoid antrum and cells were found upon *post-mortem* examination to be full of pus, there was distinct degeneration of the eighth nerve, the degeneration beginning at its point of entry into the medulla—that is, where the nerve-fibres lose their sheaths of Schwann. These degenerative lesions of the sensory protoneurons appear invariably to begin at the point where the sheath of neurilemma ceases and to spread backwards from that point. In a pregnant woman already the subject of chronic suppurative middle-ear disease the transmission of toxins along the perineural sheaths of the auditory nerves is favoured by the generally lessened want of resistance the result of child-bearing. Clinically evidences of auditory nerve degeneration are quite frequent in such cases, and the rapid augmentation of deafness is apparently due, not to the increase of any gross pathological peripheral lesion, but to a central degenerative change of toxic or organismal origin. This helps materially to explain why treatment has so little effect in these particular cases.

In my own experience the worst cases of loss of hearing are seen in young and anæmic women, and especially amongst those where a family history of deafness exists. Such patients are prone to become increasingly deaf, and the marked loss of hearing which follows each confinement would appear to be directly associated with degenerative changes induced during, and aggravated by, pregnancy and the nursing of the infant.

When we come to deal with those cases where there has been no septic disease present in the middle ears at any period, but where catarrhal or oto-sclerotic changes have previously existed, we find a similarly marked increase of deafness in certain women both during the period of pregnancy and more especially perhaps after parturition. In such cases it may be that the auditory nerve-terminals have been already injured by the local disease and hence their general power of resistance impaired. These same fibres would, therefore, suffer more as the result of a general toxæmia such as may be associated with pregnancy, the toxins ultimately invading their nuclei of origin.

Little, if any, benefit is effected by local treatment, and the result of an exhibition of such drugs as iron, arsenic, strychnine, phosphorus, thyroid extract, etc., is very disappointing. Possibly some anti-toxin or some serum may yet be found capable of neutralising the effects of the toxins floating in the perineural lymph-spaces.

The points which I specially wish to raise are: (1) the advisability or otherwise of young women already the victims of advanced chronic middle-ear catarrh, purulent or non-purulent, or of otosclerosis, entering into matrimony; (2) if marriage has already taken place and the existing deafness has been materially increased by a first pregnancy, the advisability or otherwise of suggesting means to prevent any farther pregnancy; and (3) if in a case of advanced deafness where previous pregnancies have invariably increased the existing deafness, and where the patient is again pregnant, whether it is advisable or justifiable to induce premature labour.

NOTES.

THE TENTH CONGRESS OF THE ITALIAN LARYNGOLOGICAL, OTOLOGICAL, AND RHINOLOGICAL SOCIETY will take place in Milan, under the presidency of Professor Vittorio Grazi, on September 17, 18, and 19. The subjects selected for discussion are the following: "On Clinical Methods for Examining the Sense of Equilibrium in Aural Affections" (introduced by Dr. Giuseppe Nuvoli, Professor Giovanni Ostino, and Dr. Luigi Rugani); "Foreign Bodies in the Larynx, Trachea, and Bronchi" (introduced by Dr. D. de Carli, Dr. F. Federici, Dr. U. Melzi, and Dr. D. Tanturri). Communications to this Congress should be addressed to the Secretary of the Society, Dr. O. Lughius, *via* de Città, No. 13, Siena, not later than August 21. Unpublished papers of non-members of the Association may be read if the authors are introduced by a member.

LARYNGOLOGICAL SOCIETY OF LONDON.—The following have been elected Officers and Members of the Council for the ensuing Session. President: J. B. Ball, M.D.; Vice-Presidents: F. Willcocks, M.D., Charters J. Symonds, F.R.C.S., William Hill, M.D., P. Watson Williams, M.D.; Hon. Treasurer: H. B. Robinson, F.R.C.S.; Hon. Librarian: StClair Thomson, M.D.; Hon. Secretaries: H. J. Davis, M.B., W. Jobson Horne, M.D.; Council: Sir Felix Semon,

K.C.V.O., M.D., Philip de Santi, F.R.C.S., J. Middlemass Hunt, M.B., S. Paget, F.R.C.S., Atwood Thorne, M. B.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.—At the meeting recently held in Kansas City the following were elected officers of the Society. President: Wendell C. Phillips, M.D.; Vice-Presidents: C. G. Coakley, M.D., Chairman Eastern Section; John M. Ingersoll, M.D., Chairman Middle Section; Wm. C. Bane, M.D., Chairman Western Section; J. M. Ray, M.D., Chairman Southern Section; Secretary: Thomas J. Harris, M.D., 117, East 40th Street, New York City; Treasurer: Ewing W. Day, M.D.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE PARISIAN SOCIETY OF LARYNGOLOGY, OTOTOLOGY, AND RHINOLOGY.

Meeting held April 6, 1906.

The President, DR. G. GELLÉ, in the Chair.

Dr. BOSVIEL showed a *Case of Perichondritis of the Thyroid Cartilage.*

The patient was a diabetic, aged seventy, who, while apparently in perfect health, developed a progressive swelling on the exterior of the neck, following the impaction of a foreign body on one of the ventricular bands. There was no fluctuation, but pain, fever, factor of breath, difficulty in respiration and phonation. On laryngoscopic examination there was found a general erythema of the larynx and of the epiglottis, as well as a circumscribed swelling at the middle of the right ventricular band, concealing altogether the subjacent vocal cord, while the other one was quite visible. Spontaneous evacuation of the pus took place, which was followed by rapid amelioration in all the symptoms. This fortunate and rapid termination without any ulceration was rare in cases of this kind.

Dr. CAUZARD asked by what exact sign the exhibitor made the diagnosis of perichondritis. Why not look upon it as a simple abscess resulting from erosion?

Dr. BOSVIEL, in reply, said there was no fluctuation: the tumour had the same consistence as the cartilage, and the finger could

follow the thyroid in all its details, such as would not be possible in the case of a simple abscess.

Dr. BELLIN showed a *Case of Dermoid Cyst of the Dorsum of the Nose*.

The patient was a child, aged twelve, presenting on the dorsum of the nose a considerable projection, formed by a group of three cysts. The tumour was of four years' duration, had suppurated two years ago and was operated on, but recurred three weeks ago. The exhibitor operated again and found a small cyst filled with silky hairs: this had hollowed for itself a rounded depression in the upper part of the vomer; the wound healed by first intention and recovery was complete in fifteen days.

Dr. FIOCRE showed a *Case of Primary Hæmorrhage from the Naso-Pharynx*.

The patient, a woman aged forty-three, had expectorated blood repeatedly in considerable abundance. Posterior rhinoscopy enabled one to see that this blood came from the right half of the vault of the pharynx. The diagnosis presented certain difficulties, as she was affected with pulmonary tuberculosis and was at the time in the middle of her menstrual period. The hæmorrhage was arrested by means of local cauterisation with a pearl of chromic acid.

Dr. GUSEZ had observed an analogous case in a man who had a number of very small varices, scarcely visible to the naked eye, in the naso-pharynx; the hæmorrhages were, however, very abundant, and the blood came in mouthfuls.

EXHIBITION OF INSTRUMENTS AND SPECIMENS.

Dr. KOENIG showed:

(1) *A Syringe for Intra-Tracheal Injections, made entirely of Glass.*

(2) *An unusual Foreign Body of the Auditory Meatus, resembling a Fibrous Polypus.*

This was a Brazilian bean (black on one side, red on the other), of which the red side was free, while the other was buried in the tissues.

(3) *Two Calculi of unusual Size from Wharton's Duct.*

The first was expelled spontaneously in a man aged twenty-seven. The second, in a man aged thirty, was situated at a depth of 3 centimetres in Wharton's canal. There was suppuration in

the sub-maxillary gland and pus issued by the sub-lingual orifice. After cocainisation the canal was incised with a groove trocar and the calculus was extracted with some difficulty; a discharge of pus followed and the sub-maxillary tumefaction disappeared. It was only after the opening of a salivary cyst fifteen days later that healing was complete.

Dr. MAHU had come across several cases of this kind, and he drew attention to the following points: (1) with regard to general diagnosis, intermittent swelling of the gland during meals, and especially after the swallowing of sweet articles of diet; (2) concerning treatment, after the extracting of the calculus, repeated catheterisation of Wharton's duct with small sounds increasing in size, commencing with a silver ear probe.

Meeting held June 1, 1906.

Dr. PAUL LACRENS reported a *Clinical and Anatomo-Pathological Study of a Case of Suppurative Labyrinthitis*.

The author followed up in a patient, during life, the symptoms of suppurative labyrinthitis characterised by osteitis of the horizontal semicircular canal and leucocytic infiltration in the peri- and endo-lymphatic spaces; he verified the corresponding lesions, after death, by means of histological examination. He arrived at the following conclusions:

(1) Physiologically the destruction of the membranous horizontal semicircular canal is accompanied by horizontal nystagmus when the patient looks towards the sound side, also by vertigo, with falling towards the affected side and rotation of objects in a horizontal plane.

(2) From the clinical point of view it is of the utmost importance to keep count of the variations of the nystagmus (Brieger) and of the diminution of bone-conduction (Lermoyez).

(3) This complete observation, having the value of actual experiment, shows the pathogenesis and the mode of invasion of the labyrinth and then of the meninges.

Dr. BOULAY showed a *Young Girl, aged seventeen, who had recovered from Diseased Hip-joint and was affected with old-standing Otorrhœa*.

During treatment, consisting of discreet curetting of granulations and applications of solid nitrate of silver, there appeared a

facial paralysis, the origin of which could not be discovered during the subsequent radical mastoid operation.

The author asked if in the course of this operation he ought to have opened the facial canal, or if he ought to do it now, or if he should have recourse to electrical treatment or to anastomosis of the facial nerve, with the spinal accessory or hypoglossal.

Dr. FURET mentioned incidentally that, in spite of the greater difficulty, he preferred the hypoglossal to the spinal anastomosis.

Dr. HECKEL showed a *Patient in whom Severe Hæmorrhage from the Tonsil took place during Morcellement.*

Dr. GELLÉ quoted a case—there are many similar—in which tonsil hæmorrhage came on in spite of the greatest care in operation and in the choice of instruments.

Dr. KÆNIG showed (1) a *Man, aged fifty, with Dysphonia without Tubercular or other Lesions.*

The cords were œdematous and flaccid, and were drawn together during inspiration so as to simulate the ventricular bands. Simple treatment—rest of the voice, applications of a 10 per cent. solution of nitrate of silver—brought about considerable improvement.

(2) A *Woman, aged forty, with a Cold Abscess of the Left False Cord.*

Recovery was effected by puncture and cauterisation with lactic acid.

Dr. LUBET-BARBON showed a *Patient who had been operated on recently for a Voluminous Naso-Pharyngeal Polypus by means of the Author's Forceps.*

Dr. LUC had effected in a youth, aged fifteen, destruction of a naso-pharyngeal polypus in about twenty sittings by means of electrolysis, using a current of 30 to 50 milliampères.

Dr. GEORGES LAURENS thought that in the simple cases in which the pedicle of the polypus was narrow evulsion by means of Lubet-Barbon's forceps did wonders. When the tumours were sessile it was better to "rugine" before the evulsion. In the complex cases, such as one which he had recently to deal with, it was impossible to intervene through the natural passages.

Dr. FURET showed a *Woman, aged forty, with Syphilis in Nasopharynx.*

In this case a surgeon had carried out an extensive operation

some time before for the removal from the naso-pharynx of a tumour of the size of a small pea at the same time as a gland in the corresponding sub-maxillary region. In spite of the absence of objective symptoms of nasal syphilis, Dr. Furet, having noted the indolence of the wound and enlargement of a gland on the opposite side, prescribed mercurial injections.

Dr. LUC showed (1) *a Patient who was cured of Diffused Osteomyelitis of the Cranium following an Acute Frontal Sinusitis of Staphylococcic Origin, complicated with Extra- and Intra-dural Abscess.*

After ten months of apparent cure the patient showed, this year, a fresh extra-dural focus, which was freely opened, but which even now had scarcely cicatrised.

(2) *A Complicated Deviation of the Nasal Septum.*

The patient, a young girl, was operated on according to the proceeding of Peterson and Killian. The base was so thick that it had to be removed by means of the gouge and mallet. The carrying out of this supplementary part of the operation was facilitated by the detachment of the ala nasi along the naso-labial fold; after recovery the scar was, so to speak, invisible.

(3) *A Case of Closure of Fistula between Mouth and Nose.*

A patient presenting, as the sequela of syphilitic gumma, a communication between the mouth and nose which Luc succeeded in closing by means of a flap cut at the expense of the gingival mucous membrane a little distance back, and which could be brought forward by sliding until it touched the vault of the palate. In any case, in order to get the vivified edges of the mucous membranes together, it was necessary to sacrifice a healthy premolar.

Dr. GEORGE LAURENS had been able to observe that in fistulae of this kind (he quoted a special case of fistula between the sinus and the mouth) it is useless to employ half measures and to try to make small sutures along the margin of the gum; on the contrary, it is necessary, as Dr. Luc had said, to make extensive detachments in order to liberate the big mucous flaps.

Dr. MAHU had met with several cases of this kind which he repaired successfully after having had the advice in the first place of Dr. Luc. He further called attention to cases of sinuso-buccal-alveolar fistula of small size, which he was able to block up, without cutting operations, by means of injections of cold paraffin.

AUSTRIAN OTOLOGICAL SOCIETY.

Meeting held November 27, 1905.

Chairman: PROF. V. URBANTSCHITSCH.

DR. F. ALT demonstrated a *Histological Preparation from a Specimen showing Closure of the Sinus with Connective Tissue, which was shown at the last meeting.*

The histological preparation proved that the sinus was completely obliterated.

DR. OTTO GROSSER showed *Models of the Human Embryonic Skull.*

One model represented the human skull at the third month of gestation eight times enlarged. A second model showed the region of the right ear fifteen times enlarged. The first model showed very clearly the two methods of bone-formation which are found in the skeleton of the ear.

Professor A. POLITZER remarked that the models were of very great interest. Meckel, in his work, left the question whether the processus folianus was formed from Meckel's cartilage or not uncertain. Here it was obvious that the processus folianus originated independently.

DR. H. NEUMANN showed a *Preparation of Abscess of both the Temporal Lobe and Cerebellum.*

The specimen was from a girl, aged ten, who had suffered for a year from chronic suppurative otitis media. For three months she had been confined to bed with diffuse headache, fever, rigors, and vertigo. She had severe rotatory nystagmus towards the left side and also a slight horizontal nystagmus towards the right. The left ear was completely deaf, and there was a tendency to fall towards the left side. Abscess on the left side of the cerebellum was diagnosed and operation decided on. On lumbar puncture sterile fluid containing small flakes (of lymph?) was obtained.

The dura of the middle fossa was found intact. A small collection of pus was found external to the dura in the posterior fossa. The dura was divided and the cerebellum punctured. Fœtid pus, grey-yellow in colour, escaped at high pressure. Immediately after the operation the oscillations of the eye-ball were exactly the reverse of those above described. The temperature fell to normal, and there was no vertigo. The characteristic nystagmus returned

before the first dressing of the wound. On aspiration of the abscess-cavity a fair amount of thick, non-fœtid pus was evacuated. During the manipulation the rotatory nystagmus towards the diseased side suddenly ceased, but the horizontal nystagmus towards the healthy side still continued. After packing the abscess cavity the rotatory nystagmus was again conspicuous.

On the following day the temperature was 102.5° F. There was diffuse headache, some stupor, paralysis of the left upper extremity, and complete facial paralysis; fundus oculi normal; slight ptosis both sides. A further operation was not allowed by the relatives. Death took place suddenly on the eleventh day after the operation.

The *post-mortem* examination showed meningitis, the inner surface of the dura being covered with a hæmorrhagic exudation 3 mm. thick. In the left cerebellar hemisphere, close to the pons, was a cavity, the size of a nut, with granulating walls. At the anterior end of the right temporal lobe there was also a small cavity enclosed in necrotic tissue; surrounding this in the parenchyma was a wide patch of encephalitis.

The combination of a right-sided temporal abscess with a left-sided cerebellar abscess gives the case a special interest. It is also noticeable that plugging the abscess-cavity produced nystagmus.

Dr. H. NEUMANN showed a *Preparation in which the Dura of the Posterior Fossa was displaced inwards and the Sinus compressed by a Neoplasm the Size of a small Apple.*

The tumour was hard and covered with smooth dura. A microscopic examination proved it to be an adeno-carcinoma, in all probability a metastatic growth.

Professor A. POLITZER said that in a girl killed accidentally he had seen a tumour of the tegmen tympani. The dura was arched forwards, the tumour—a psammoma—arose from the attic and had dragged the tensor tympani out of position. This growth had not given rise to any symptoms sufficiently severe to cause the patient to take medical advice.

Dr. F. ALT recalled a case of mammary carcinoma, with secondary growths in the middle and internal ear, which he had demonstrated.

Dr. ERNEST URBANTSCHITSCH showed a case of *Abscessus Dissecans Profundus of an Unusual Type.*

The patient, aged thirty-seven, had enjoyed good health since

childhood. On September 15 he was obliged to pass direct from a room with a temperature 125° F. to one 64° F. Immediately afterwards pain on the left side of the head commenced and steadily got worse until September 20, when vertigo and fever supervened. The pain was so severe that the patient was deprived of sleep. On October 17 he came to Vienna. The following condition was found: No otorrhœa. No perforation of the membrane, which was in some respects abnormal. No depression of the posterior upper wall of the meatus. Great pain on percussion or pressure over the surface of the mastoid. Swelling of the soft parts over the lower half of the mastoid process. No improvement with fomentation or application of Ung. Credé, so operation decided on on October 20.

In chiselling into the mastoid nothing abnormal was found, as the swelling over the lower half of the process seemed to point to the existence of a purulent inflammation of the cells near the tip of the process; these were opened, with, however, a negative result. Lastly, the sinus was explored, and here suddenly from one to two tablespoonfuls of thick, creamy pus escaped. The bone encircling the sinus was carious. The case appeared to be one of perisinusitis and extra-dural abscess. Immediately after the operation the patient felt better, and could sleep better than he had done for a long time. Two days later he suffered from laryngeal obstruction. Simple remedies did not relieve the swelling in the larynx, and there was a sensation of deep fluctuation in the neck. On the eighth day a deep incision was made at the hinder edge of the sterno-mastoid, three fingers' breadth below the tip of the mastoid process; about three tablespoonfuls of thick, creamy pus escaped. The abscess cavity proved to be fairly extensive, especially in an upward direction.

The case appeared to be one of Bezold's mastoiditis, but the points of interest are that the mastoid cells were not affected by the purulent inflammation, that the purulent process had quite subsided in the middle ear; in spite of this a perisinus abscess had formed and from it a deep extension had taken place into the neck, but the point where the pus penetrated the bone was not found; it certainly was not through the mastoid process as in typical Bezold's mastoiditis.

Dr. HUGO FREY delivered a discourse on *the Anatomy of the Temporal Bone*.

He suggested a more exact nomenclature for the various parts about the petro-squamous and petro-tympanic sutures.

Knowles Renshaw.

PROCEEDINGS OF THE LARYNGOLOGICAL SOCIETY OF LONDON.

One Hundred-and-seventh Ordinary Meeting, June 1, 1906.

CHARTERS J. SYMONDS, F.R.C.S., *President, in the Chair.*

The following communications were made :

REPORT OF MORBID GROWTHS COMMITTEE.

(1) Dr. Brown Kelly's specimen of Hyperplasia of the Uvula, shown December, 1905. The Committee agreed with this description.

(2) Mr. Stewart Low's specimen of Naso-pharyngeal Growth, shown February, 1906. The Committee considered the specimen to be one of carcinoma.

CASE OF INOPERABLE CANCER OF THE FAUCES, THE PHARYNX, THE TONGUE, AND THE CERVICAL GLANDS THAT HAS SHOWN MARKED AMELIORATION AFTER TREATMENT FOR TEN WEEKS WITH A BACTERIAL VACCINE OF NEOFORMANS.

Shown by Dr. SCANES SPICER. Remarks explanatory of the treatment by Professor A. E. WRIGHT, F.R.S. The communication is fully reported on pp. 265-269 of this issue.

The PRESIDENT said he had been much struck by the condition of the part at the present time; it was so clean and free from odour, and from the description of the condition given by Dr. Scanes Spicer, they were able to appreciate the value of the treatment.

The members had already shown their appreciation of Dr. Wright's lucid though brief account of the method he had adopted in the case and the progress of the investigation up to the present. They would agree that no one was better qualified to extract whatever was of good in the method than Professor Wright.

A CASE OF INFILTRATION OF THE LEFT VOCAL CORD.

Shown by Mr. H. BARWELL. The patient, a male nurse, aged fifty-three, had been suffering from hearsness and frequent aphonia for eleven months, and much pain on swallowing solids for four months; there was slight inspiratory stridor. There was some frothy expectoration, with occasional small streaks of blood. Examination of the chest revealed bronchial breathing and increased vocal fremitus and resonance over the entire upper lobes of both lungs, but the physician who examined him did not consider the signs distinctive of phthisis. The left cord was occupied for

its anterior two thirds by a dark red, papillary swelling; the posterior third was red, the cord was fixed near the cadaveric position, and the left arytenoid was slightly swollen, having the appearance of inflammation about the joint rather than tuberculous infiltration; there was a small excrescence in the interarytenoid space to the right of the middle line. There appeared to be some subglottic swelling extending across the anterior commissure to the right side.

The patient had only been examined once in the out-patient room; his sputum had not been examined nor had a temperature chart been kept. Mr. Barwell thought the case might interest members from the point of view of laryngoscopic diagnosis and he desired opinions on the subject.

Mr. CRESSWELL BABER said he thought there was ulceration, and that the prominence on the left arytenoid was the edge of an ulcer. If antisyphilitic treatment had not yet been tried, he recommended that it should be ordered.

Dr. STCLAIR THOMSON regarded the case as distinctly one of tubercle, because of the infiltration of the interarytenoid, the prominent mamillary surfaces, and the great loss of part of the vocal cord and the adjoining ventricular band.

Mr. BARWELL, in reply, said he refrained from expressing an opinion, but he had so far committed himself as to arrange to take the patient into the Mount Vernon Hospital for Consumption.

A CASE OF PALATAL TUMOUR OF TWENTY YEARS' DURATION.

Shown by Dr. J. W. BOND. The patient was a woman aged sixty-five. The tumour first appeared twenty years ago, and was a small warty growth. Twelve years ago it was operated upon at the London Homœopathic Hospital. The growth remained absent for eight years. Since then it has been growing until it has reached its present size. There was never any pain until lately. There had been considerable hæmorrhage during the last few weeks. The patient was getting very weak. The disease extended into both nostrils. There had been considerable blood and watery discharge from the nostrils lately. The maxillary antra were both absolutely dark. No glands could be felt in the neck. The pain had been greatly relieved by iodide of potassium, 5 grs. three times daily.

No microscopical specimen of growth was shown, nor had the diagnosis been obtained of the tumour that was removed.

The PRESIDENT thought it must be a large sarcoma; it was evidently not an epithelial new growth.

A CASE OF EPITHELIOMA OF THE TONSILS.

Shown by Dr. E. A. PETERS. The patient, an old soldier, aged fifty-five, when seen in June, 1905, for two months had been aware of a lesion which appeared as a round ulcer half an inch across situated on the right tonsil and anterior pillar. Microscopical evidence indicated epithelioma. The ulcer improved slightly under iodide of potassium and then relapsed.

July 6, 1905.—Through an incision along the sternomastoid a few glands were removed which appeared quite healthy; the external carotid was then tied.

July 13, 1905.—Ten c.c. of antistreptococcal serum were injected and the patient anæsthetised and placed in the Trendelenburg position with extended neck. A preliminary laryngotomy was carried out and the pharynx plugged with a soft sponge. The cheek was split and the soft palate was divided. An incision beyond the margin of the œdema was made, the pharyngeal wall was separated from its connections, with the tongue, hard palate, and mandible. The bone immediately under the œdema was chiselled away. Finally the mucous membrane was brought together. There was very little bleeding. The patient's bed was raised by placing the foot on two chairs. The plug and tube were removed two hours later. There was present a slight recurrence in the scar and an enlarged gland.

The PRESIDENT congratulated Dr. Peters upon the clean sweep which he had made so far. He thought some further operation was justified. The inability to open the mouth he regarded as a result of the scar. He recommended a freer operation in the sub-maxillary and cervical regions, which, combined with a further removal of the growth in the mouth, offered good prospects.

Mr. BETHAM ROBINSON suggested that Dr. Peters should divide the jaw, by which he would not only secure good mobility, but would get satisfactorily at the ulcer.

FUNCTIONAL APHONIA IN A SOLDIER AFTER AGUE.

Shown by Dr. E. A. PETERS. The patient, aged twenty-five, lately in the 13th Hussars, was in the South African campaign for two years, with only one month in hospital.

On February 19, 1905, while in India he was thrown from a horse and one month later was admitted for a severe attack of "ague" which lasted about fourteen days; an attack of convulsions resulted in complete paralysis of all the limbs without bladder trouble. Aphonia set in at the same time.

In March, 1906, on examination there was complete aphonia. The pharynx and larynx were nearly insensitive. On attempted phonation the vocal processes flicked together, but the cords were lax. During respiration the cords were widely abducted, while there was only a suspicion of movement.

In May the patient twisted his ankle and recovered his voice.

CHRONIC OSTEITIS OF THE FRONTAL BONE WITH CHRONIC SINUSITIS.

Shown by Dr. E. A. PETERS. The patient was a road-sweeper aged forty-one. Three years ago a radical cure of the left maxillary antrum was carried out, with removal of the outer wall of the inferior meatus for chronic empyema. Extensive pyorrhœa alveolaris was present; this had never subsided.

In January, 1905, he suffered with headache, and an abscess presented beneath the right supra-orbital margin. This remained open.

In June, 1905, he came to hospital. There was a little pus in either side of the nose, but no collection in the left antrum.

Dr. Peters explored the right frontal sinus region, but could find no sinus or infundibulum. He scraped a considerable amount of softened diploe away at this spot and also beneath the suppurating abscess tract.

In May, 1905, there was pus in both sides of the nose and a probe did not pass above the orbital margin on the right side. On the left side a probe entered into a large frontal sinus which was full of pus. There was no external swelling or pain.

The PRESIDENT said the patient seemed to have suppuration on both sides of the nose, and he thought there must be a frontal sinus somewhere on the right side, possibly small, and a fairly large one on the left.

Dr. STCLAIR THOMSON said he had a very similar case to the present one, which gave him a good deal of trouble. The patient had chronic sinusitis in most of the cavities of the head, and evidently had had an acute attack, with swelling over the right orbit. This was lanced in the country, ran an indefinite course, and came with a sinus similar to that in Dr. Peters' case, but farther out. The frontal sinus was full of pus and polypi, but it did not communicate with the fistula in question; it was a fronto-ethmoidal gallery, which ran out over the top of the orbit. He thought the present case was one of suppuration of one of the accessory cavities, probably the frontal, and of the ethmoidal cells. He had already suggested to Dr. Peters that if he did practically a Killian flap—making the flap from the middle line on to and below the inner canthus—he would get freely into the ethmoidal cavity, and would no doubt reach the bottom of the suppuration. His own case would be published next month, with photographs. It gave him much trouble because he had not at first been bold enough. His patient got well.

FIXATION OF THE LEFT VOCAL CORD IN THE CADAVERIC POSITION, MOST PROBABLY DUE TO ADHESIONS FIXING AND DRAGGING ON THE RECURRENT LARYNGEAL NERVE.

Shown by Mr. STUART LOW. He had shown this case as the condition, especially in a young woman, was uncommon, and the cause unusual. The patient was a young woman aged nineteen, and she came to the Central London Throat and Ear Hospital complaining of failure of the voice on speaking for any length of time. This had been present for six months. She had been under her doctor, but had not benefited by the treatment.

There was a history of severe rheumatic fever eight years ago, and she had had at intervals since repeated recurrences of rheumatic pains in her joints.

Examination of the larynx showed the left vocal cord completely fixed in the cadaveric position. The opposite cord came over and approximated well to the left vocal cord on phonation. The voice was of pure, low-pitched tone and there was no intermittent hoarseness.

Examination of the chest revealed the following: There was mitral regurgitation and considerable enlargement of both right and left ventricles. This, however, probably did not in itself account for the very great cardiac enlargement. On the other hand, pericarditis leading to adhesions was a frequent complication of rheumatic endocarditis in childhood and was a recognised explanation of some of the marked cardiac enlargements which are met with in early life. The probability therefore was that a condition of pericardial adhesion was present.

Pericarditis was mentioned by several writers as a cause of laryngeal paralysis. There was presumptive evidence of pericardial adhesions. Such adhesions may be responsible for a laryngeal paralysis. Therefore in all probability the paralysis present in this case was the result of pericardial inflammation and consequent thickening and adhesions to the neighbourhood of the recurrent laryngeal nerve as this looped backward under the aortic arch.

Dr. H. J. DAVIS said he thought Dr. Atwood Thorne last year showed a case of the same kind, and it was thought to be probably due to left auricular dilatation. The skiagram now shown was suggestive of a dilated left auricle pressing on the recurrent laryngeal nerve. Adhesions forming in the pericardium in pericarditis was common, but he did not remember to have seen a case where the adhesion was said to have dragged on the recurrent laryngeal nerve and caused paralysis. He thought the present patient was more likely to have a dilated left auricle

as a result of mitral disease with consequent regurgitation. She was able to talk well, and the right cord swung over to meet its fellow. There was no dilatation of pupil on either side, as was present in Dr. Atwood Thorne's case. In a severe attack of pericarditis there was myocarditis and endocarditis as well, for there was only the thickness of the myocardium for the inflammation to spread through.

Mr. BARWELL said that a dilated left auricle was commonly given as a cause of paralysis of the recurrent laryngeal nerve; but he had not heard adhesions mentioned before. He believed cases had been reported in which the nerve had been compressed by massive pericardial effusion. A similar case was recorded in the *Archives Internationales*, in which paralysis of the recurrent laryngeal on the left side followed a right pneumothorax. In that case the suggestion made was that there was positive pressure in the right pleura, which pushed over the arch of the aorta and dragged on the recurrent laryngeal. Therefore apparently various changes in the chest might give rise to that paralysis, and it became a matter of conjecture as to which was operating in a given case.

Mr. STUART Low, in reply, said it was considered doubtful whether the shadow in the skiagram represented the left auricle. Physicians said they could not depend on it. There was dragging on the chest-wall, which was thought to be due to pericardial adhesions; if the patient had been stripped and lying on a couch, that dragging would have been very obvious. Moreover, the distress of the patient on exertion was far more than would be accounted for by hypertrophy of the organ. The hypertrophy of the heart was thought to be due to the effort of that organ to overcome the adhesions.

PROCEEDINGS OF THE BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

General Meeting, held on Friday, May 11, 1906, at the Medical Society's Rooms, 11, Chandos Street, Cavendish Square, W.

The President, Dr. R. H. WOODS, in the Chair.

Mr. DUNCAN MATHESON MACKAY, M.D.Edin., M.R.C.S.Eng., was duly elected a Fellow of the Association.

Mr. STUART-LOW exhibited a *Case of Cleft Palate, showing that Adenoids diminish the Dyslalia.*

Mr. STUART-LOW said that, as so much that was harmful had been attributed to the presence of adenoids, it would sound almost paradoxical to speak of any advantages to be gained by their existence. This case illustrated the fact well, however, that but for the adenoids the defects of speech would have been much more noticeable. With such a large palatal deficiency it was very

remarkable that articulation was not more imperfect. This was attributable to the occluding diaphragm-like action of the adenoids.

The consonants uttered in the so-called third articulation position—that is to say, with the tongue and soft palate approximated—were those chiefly defective in clefts of the soft palate, and also the palatal “r” which resulted from vibration of the uvula.

The practical point that he was anxious to emphasize was, that in cases of defective palate adenoids should not be removed, as the result would be to render the dyslalia more marked. He was afraid that these views were not sufficiently recognised. It was not long ago that he had heard an animated conversation between a distinguished specialist and an eminent surgeon as to the precedence of operative procedure—palate or adenoids? He certainly considered that adenoids should remain untouched until it had been proved that the palate operation was a success.

Dr. DUNDAS GRANT considered that the pad of adenoids helped to diminish the space between the spine and hard palate and thereby to improve the speech. He thought they should therefore be left until after the palate operation, and probably altogether. It seemed to act in the same way as the projection forwards of the cervical vertebræ acquired by some of the subjects of cleft palate for the purpose of improving their speech. The question seemed to call for consideration, as some writers on the subject advised removal of adenoids before operation on the palate.

Mr. MAYO COLLIER had not quite gathered the full meaning of Mr. Low's remarks. He could not understand why the palate had been left without operation. The palate was an excellent one for operation. The operation should take place first and the removal of adenoids be postponed for some time till the speech had been improved and formulated. The presence of the adenoids was an assistance to the subsequent task of learning to speak. Mr. Collier cited a case where the hard and soft palate and upper lip were defective. The palate and lip were operated on and the adenoids left, with subsequent excellent vocal results.

The PRESIDENT said it had been his invariable practice to leave the adenoids in cleft palate. To remove them would be to increase the distance through which the newly-formed velum would have to travel, and so increase the difficulty in the way of the child learning to talk.

Mr. STUART LOW said that he agreed entirely with the President in his remarks that the operation for cleft palate should remain with the specialty. There was a tendency in certain quarters to

hand this operation on to the general surgeon, against which he took this opportunity of protesting.

Dr. ANDREW WYLIE showed a *Case of Lymphangitis of the Upper Lip*.

The patient, a female, aged twenty-two, attended at the Central London Throat and Ear Hospital last April to see what could be done for a hypertrophy of the upper lip. She complained that the lip had been more or less swollen for the last five and a half years; sometimes it was so large as to touch the point of the nose. Three years ago interstitial keratitis gradually appeared in both eyes. She had never been very strong; when a child she had had glandular abscesses in the neck and also an ulcer in the left eye. Her father, mother, four brothers, and three sisters were living and well; two sisters were born dead.

The present condition showed well-marked interstitial keratitis of both eyes; Hutchinson's teeth and several decayed stumps; considerable hypertrophy of the upper lip, causing discomfort but no pain. The lungs were sound.

Dr. Wylie considered the condition was due to hereditary specific disease; the lymphangitis of the upper lip must be due to some local irritation, as an abrasion or decayed teeth in a syphilitic subject. The treatment he suggested was to remove the decayed teeth and push the mercurial inunction. Acute lymphangitis of the lip was common, due to some local irritation. Congenital lymphangitis of the lip, called "macrocheilia," was not uncommon, but a chronic hypertrophy lasting five and a half years was rare.

Mr. DENNIS VINRACE inquired whether vaccination three years ago had modified the course of the disease. Undoubtedly there was congenital syphilis, but five years ago the girl was stated to be in good health. The vaccination gave rise to extensive local inflammation, and a few weeks afterwards a typical syphilitic ulcer developed on the leg. Her lip, too, became much more thickened at that time. Was it possible she had been re-infected with syphilitic virus, or did the vaccination light up the inherent syphilis?

Mr. H. BARWELL considered it purely a case of syphilitic lymphangitis, and did not think any secondary septic infection necessary to explain the symptoms.

Mr. STUART-LOW said that he was of Dr. Wylie's opinion that this was due to syphilitic infiltration. He had seen a similar case a few days ago in a child of three, in whom there was deep scar-

ring of the upper lip in conjunction with much firm thickening and infiltration. The other corroborative indications of hereditary syphilis were well marked, so that in that instance the diagnosis was indubitable.

Mr. MAYO COLLIER showed a *Case of Nævus of the Cheek*.

Mr. DENNIS VINRACE congratulated Mr. Collier on the result, and forecast a cure by the process of healing and cicatrisation without the necessity of further operative measures. The vascular supply had been so successfully checked as to mask the nævoid origin of the growth.

Dr. KELSON thought if further treatment were necessary multiple puncture with the galvano-cantery would be the most effectual treatment.

Dr. KELSON showed a *Case of Laryngeal Disease*.

The patient was a schoolmistress, aged thirty-six, and had suffered from loss of voice for four months. On examination the ventricular bands were seen to be swollen, and the vocal cords thickened, and there was some interarytenoid swelling.

Dr. DUNDAS GRANT thought the infiltration of the cords and interarytenoid space was more probably inflammatory than tuberculous, though the latter could not at present be absolutely excluded. He considered the swelling of the ventricular band more apparent than real, and if there was some degree of infiltration there was certainly a *vicarious* action of these bands, which disappeared when the patient produced a vocal sound by means of inspiration instead of expiration.

Mr. BARWELL said the diagnosis rested between simple and tuberculous laryngitis, and it was just one of those cases where the diagnosis was very difficult. The form of the interarytenoid swelling in the middle line without central depression, supposed to be suggestive of tubercle, was not in his opinion of great importance. She had marked nasal obstruction, and was working in a school, straining the voice in a dusty atmosphere. He believed it to be chronic laryngitis, and considered that a few weeks' complete rest with simple local treatment would make a great difference in the appearance.

The PRESIDENT considered that the convexity of the interarytenoid fold, taken in conjunction with the general thickening of the vocal cords were strongly presumptive of a tubercular origin. Examination of the sputum for bacilli might settle the question.

Dr. ANDREW WYLIE showed a *Case of Accessory Tragus*.

Dr. DAN MCKENZIE made a communication with reference to the case of epithelioma of the posterior surface of the auricle in which the auricle was entirely removed.

Dr. Dan McKenzie intimated that a recurrence set in on the lower lip of the meatus about three months after the operation and was advancing rapidly.

The specimen was shown at a recent meeting of the Society.

The PRESIDENT showed a *Forceps* which he had designed for removing the anterior edge of the vomer near where it joins the floor of the nose. He also showed two *Elevators* for raising the mucous membrane of the opposite side of the nose through the window in the quadrilateral cartilage.

Dr. ANDREW WYLIE showed some *Nasal Guards* for resection operations which he had designed to obviate the use of the speculum.

Abstracts.

PHARYNX AND NASO-PHARYNX.

Baumann, Walther (Breslau).—*The Pharyngeal Reflex*. "Münc. med. Woch.," March 27, 1906.

In seven hundred cases systematically examined with regard to this, complete absence was only found in three cases of hysteria, bulbar paralysis, and arterial sclerosis respectively. The reflex was frequently considerably lowered in hysterical subjects and occasionally lowered in epileptics. For the observation of the pharyngeal reflex it is not necessary to cause a vomiting movement: a distinctly visible contraction of the pharyngeal muscles is sufficient. The reflex is more frequently increased in children than in grown people. Occasionally an inhibition of the reflex is produced by psychical influences. In chronic pharyngeal catarrh an increase of the reflex is not usually present, and in the acute forms there is no regular rule. In cases of hypertrophy of the tonsils without inflammatory swelling a lowering of the reflex is in general very uncommon.

Dundas Grant.

Jager, Karl.—*Tumour of the Left Half of the Face originating in the Roof of the Pharynx*. "Münc. med. Woch.," May 15, 1906.

The description of the case is illustrated by a picture representing the horrible disfigurement which can be produced by the so-called malignant polypus, in this case a soft vascular sarcoma growing from the periosteum of the sphenoid and extending into the cavities of the left orbit, nose, and pharynx. The smallest incision gave rise to severe bleeding for half an hour. The case had no doubt reached a stage at which it was inoperable.

Dundas Grant.

NOSE.

Botey, Ricardo (Barcelona).—*A Case of Congenital Complete Osseous Atresia of the Right Nasal Fossa.* "Annales des Mal. de l'Oreille du Larynx, du Nez, et du Pharynx," April, 1906.

A woman, aged eighteen, had suffered from nasal obstruction since birth, worse on the right side, and as a result had always been a mouth-breather. During infancy she suffered considerably from malnutrition, owing to her inability to suckle. In childhood she was the subject of nightmare and attacks of suffocation. Six years previously a surgeon applied the galvano-cautery to the left fossa, which somewhat improved the breathing.

When first seen by the author her nose was sunken and the ascending processes of the maxillæ were thick and prominent. There were hyperostoses over the frontal eminences, above the supra-orbital arches, and on both tibiae. Her teeth were very irregular, defective in number, and misshapen; Hutchinson's type was present.

Anterior rhinoscopy revealed the right fossa completely occluded at the bottom of the vestibule, with material of stony hardness, and on the left side a thickening of the base of the septum, with marked bony overgrowth of the inferior turbinated bodies. Posterior rhinoscopy showed complete blocking of the right choana and slight atresia of the left. Subjective symptoms consisted of neuralgic pains about the right frontal and periorbital regions, also in the tibiae at night. The mother had had three abortions, and two children died in infancy.

A diagnosis of hereditary syphilis was made, chiefly evidenced in this case by hyperostoses of the cranium, face, outer walls of nasal fossæ, septum, basilar process, and inferior surface of the body of the sphenoid.

Treatment.—Under chloroform anæsthesia the obstructing bony deposits were removed with chisel and gouge. Considerable difficulty was experienced in clearing the right fossa. After rendering the nasal passages permeable a flattened tin cone was worn in the right one and lavage ordered. After ten days the cone was removed and granulations were touched with chromic acid. Iodides of the alkalis were administered internally. Seven weeks after the operation the patient was cured, the nasal fossæ being perfectly patent; the exostoses had diminished in size and the neuralgic pains disappeared. Hearing and smell, which had both been impaired, were considerably improved. *H. Clayton Fox.*

Denker, Alfred (Erlangen).—*A New Mode of Access in the Operation for Malignant Nasal Tumours.* "Münch. med. Woch.," May 15th, 1906.

The access is made through the maxillary antrum, the incision through the mucous membrane and periosteum being carried beyond the middle line; the soft parts are detached and drawn up, and the pyriform aperture is freely exposed. Before opening the antrum the muco-periosteum in the interior of the nose is detached by means of a fine raspatory through the nasal orifice, and not merely in the inferior meatus but in the middle one as well. Very free removal of the facial wall of the antrum, as well as of the bony inner wall, and (although this is not very clearly expressed) of the margin of the pyriform opening also, is then effected by means of forceps, so that the antrum is only separated from the nasal cavity by a layer of loose membrane which is cut away freely with scissors and the tumour removed with it. Free access is given, not

merely to the nasal cavity, but to the sphenoid as well. At the stage where the nasal mucous membrane is first detached a strip of gauze is inserted between the mucosa and the bone to control the bleeding. The further extension of operation is decided by the condition found.

Dundas Grant.

LARYNX.

Poli, C. (Genoa).—*Avellis' Syndrome*. "Archivii Ital. di Laringologia," Naples, April, 1906; and "Archivii Ital. di Otologia," Florence, April, 1906.

This valuable article is a *résumé* of the report made to the Ninth Congress of the Italian Laryngological Society held at Rome in 1905.

Dr. Poli points out that the association of a unilateral paralysis of the laryngeal muscles with that of other muscles of the same side had been noted from the earliest laryngoscopic period. It was, however, in 1891 that Avellis in Schmidt's Clinic called attention to the fact that of 150 cases of unilateral paralysis in 10 there was an associated homolateral paralysis of the soft palate. From that time until now the cases, either of the simple form or associated with paralysis of other muscles, have so multiplied that in the author's opinion the time has come for analysing the material available. Seventy-one cases have been collected from the literature and divided into four groups: (1) the genuine, (2) the symptomatic, (3) the atypical, and (4) the crossed form.

(1) *The genuine form* is divided into three classes: (a) *pharyngo-laryngeal paralysis* (Avellis' syndrome); 18 cases, 12 men and 6 women, have been recorded by Mann, Molinie, Trautmann and Longhi. The left side was affected in 11 cases and a peripheral lesion was positively diagnosed in all except 2 cases. The author discusses at considerable length the varying aspects of the symptoms.

(b) *Pharyngo-laryngeal hemiplegia with that of the shoulder of the same side (trapezius and sterno-cleido-mastoid)*.—Nine cases recorded, 5 men and 4 women, by Tapia, Poli, Foubin, Lermoyez and Laborde, Tilley, Desvernine, B. Fraenkel and Chaveau. The cause was positively ascertained by autopsy in only two. The site of the lesion is regarded, however, as peripheral—that is, one affecting in its course the extreme branch (trapezius and sterno-mastoid) of the spinal accessory and its internal branch (velum palati and vocal cord). On this point Dr. Poli remarks: "This last fact throws much light on the etiology of the preceding group of cases, confirming, from the clinical point of view, the opinion that to the bulbar portion of the spinal accessory belongs the innervation of the larynx by way of the recurrent and that of the velum palati by way of the pharyngeal branch of the vagus."

(c) *Glosso-pharyngo-laryngeal hemiplegia involving eventually the muscles of the shoulder (Hughlings-Jackson's form)*.—Sixteen cases recorded, 14 men and 2 women, by Schech, Bernhardt, M. Schmidt, Wiersma, Israel-Remack, Trautmann, Avellis, Wiener, Hughlings-Jackson, Stephen Mackenzie, Pel, Jalb. Attention is called to a point connected with four of these cases and two of the preceding group: "that while the symptoms indicated a lesion of the ninth, tenth, and eleventh nerves at their exit from the base of the skull, the sensibility of the pharyngo-laryngeal mucosa as well as the reflexes of that region remained normal. This fact is in evident contrast with the classical scheme of the peripheral

innervation of the larynx actually accepted, which accords the sensory function to the superior laryngeal." In all these cases with one exception the facial nerve remained intact. The deviation of the angle of the mouth in the disease should perhaps be referred (Gowers) to the lesion of the hypoglossal.

(2) *Associated or symptomatic forms*.—Twenty-eight cases, 20 men and 8 women, were recorded by L. Harmer, Oltuszewski, Schlodtmann, Turner, Avellis, de Havilland-Hall, Strazza, Eisenlohr, Jobson Horne, Poli, Hoffmann, Tilley, Semon, Moebius, Hughlings Jackson, R. Lake, and Remack.

The distinctive feature of this group is the central (bulbar) site of the lesion. The question whether by means of any of these cases one might be able to refer the pharyngo-laryngeal hemiplegia to a cortical origin would seem to be implicitly negatived by the fact, now ascertained, that the literature contains no incontestible case of cortical laryngeal paralysis. On the other hand, Dr. Poli suggests that the question might be raised whether in any of these cases—*e. g.* of tabes or syphilis—the lesion was truly bulbar in view of the fact that in some cases of posticus paralysis of tabetic origin the autopsy demonstrated rather a peripheral lesion of the nerves than a nuclear. It would appear incontestible, however, that the lesion was bulbar in some of the cases, and especially in those due to syringo-myelia. It is worthy of note that in none of them did the lesion extend to the spinal root of the accessory (sterno-mastoid and trapezius).

(3) *Atypical forms*.—(a) Glosso-pharyngeal, 3 cases, Hirt, Leudet, and Schiffrers; (b) glosso-palatine, 2 cases, Lermoyez, Ascoli; (c) glosso-laryngeal and shoulder muscles, 1 case, Tapia, due to patient being gored a little below the angle of the lower jaw; (d) laryngeal and muscles of shoulder, several cases by many authors due to lesion of spinal accessory in both branches and its peripheral tract.

(4) *Crossed forms*.—(1) A case of *right* glosso-pharyngeal paralysis and homolateral muscles of shoulder and *left* vocal cord (Hughlings Jackson). Notwithstanding Morell Mackenzie's opinion, that this was of bulbar origin, the author considers that from his study of the previous cases it may be ascribed to a peripheral cause. (2) Case of paralysis of *left* cord and *right* side of velum palati (M. Mackenzie). Autopsy disclosed a superficial inflammation of the medulla. (3) Case of paralysis of the *left* side of palate and *right* vocal cord (Birkett). Cause unknown. There was a painful swelling at the angle of one jaw.

Dr. Pole draws the following conclusions: The classification is not absolute, as many of the cases, better and longer observed, might perhaps be included with other forms. Although the data from autopsies are available in only nine cases, it is possible to state (1) that in those which present themselves in the *genuine form* the site of the lesion is peripheral and preferably along the extra-cranial course of the nerve-fibres, but the nearer the point of exit from the cranium the more complex are the symptoms. (2) In the cases in which the lesions are varied and complex the site of the lesion is often—but not always—central or more accurately bulbar.

James Donelan,

ESOPHAGUS.

Zahn (Halle).—*A second Case of Distortion of the Esophagus produced by Vertebral Eecchondrosis.* "Münch. med. Woch.," May 8, 1906.

The patient had been ordered feeding by the stomach-tube on account

of general wasting (chronic pulmonary tuberculosis, etc.), but the tube was found, at a distance of 40 cm. from the teeth, to strike upon a hard and apparently smooth resistant object, beyond which it could not be pushed. The following conditions were found on *post-mortem* examination :

The seventh and eighth left ribs were thickened at the junction of the cartilage and the bone, through the presence upon each of a hemispherical elevation $1\frac{1}{2}$ cm. in height, which was of bony hardness and extended to the inner surface of the sternum. The cervical spine was moderately lordotic, the thoracic in the middle third kyphotic and slightly bent to the left, especially at the level of the eighth and ninth vertebræ. About $1\frac{1}{2}$ cm. to the right of the middle line of the intervertebral disc, between the ninth and tenth thoracic vertebræ, there was a smooth, greyish-white, cylindrical growth, $1\frac{1}{2}$ cm. in height and 1 cm. in width, with rounded surface and cartilaginous consistency. A similar smaller one grew from the disc between the tenth and eleventh; the œsophagus lay between the thoracic aorta and the growth, and was bound to these by loose connective tissue. The calibre was slightly widened above but slightly bent at the point of pressure and reduced in diameter. The scoliosis was not tuberculous, and there did not seem any probability of the growths having arisen from syphilis or injury, nor that they were part of multiple congenital ecchondrosis, the thickening of the seventh and eighth left ribs being probably ossified callus resulting from an old fracture. The former case is published in the *Münch. med. Woch.*, 1905, No. 35.

Dundas Grant.

EAR.

Bourguet, Julien.—*Surgery of the Labyrinth.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," September, 1905.

In this paper the topographical relations of the aqueductus Fallopii, external semicircular canal, and other structures entering into relation with the outer wall of the vestibule are precisely stated. The methods of opening the labyrinth by Botey, Hinsberg, and Jansen are fully described and criticised, and then the author details his own, which is as follows :

(1) An *évidement* is performed, fully exposing the inner wall of the tympanum, attic, aditus, and antrum, and the ossicles are all extracted.

(2) The vestibule is first entered superiorly. A specially constructed guard, called a facial protector, is placed in such a manner as to shield the facial canal and so that its hollowed-out upper edge is in relation with the widened orifice of the external semicircular canal. A burr is then worked into the vestibule at this spot, and the ampullary ends of the external and superior canals, together with the upper and posterior parts of the vestibule, are opened up. Attention is then directed a little above the point of first entry into the vestibule, and the inferior extremity of the anterior branch of the vertical canal is trephined. The protector is then withdrawn, and, working from before backwards, the anterior segment of the external canal up to the point of its reflection inwards is laid bare; finally, the posterior branch of this canal is opened up. A wire, acting as a guide, is passed along it and brought out at the vestibule, after which the bone intervening between it and the operator is broken down. Thus the vestibule is freely opened above and behind.

(3) The vestibule is then attacked inferiorly. The lower frame of

the oval window and the bone situated between it and the round window are removed. During this procedure the guard is again called into requisition to protect the facial canal.

(4) Opening of the cochlea. The promontory is broken down, taking care not to proceed in an upward direction beyond the processus cochleariformis, and to advance with caution in a forward direction, stopping at the tympanic extremity of the tube so as to avoid the carotid canal; in the case of an abnormal encroachment backwards of the latter on to the promontory a flow of venous blood issuing from the carotid sinus, which accompanies the artery in all its bony course, would act as a warning of its presence.

The author considers that to remove more bone is dangerous, and that by the method he adopts a very efficient drainage of the labyrinth is obtained.

H. Clayton Fox.

Hastings, Hill (Los Angeles).—*A Case of Acute Middle-Ear Suppuration complicated by Labyrinthine Fistula and Paralysis of the Abducens Nerve.* "Archives of Otology," vol. xxxv, No. 1.

Gradenigo is quoted as having arrived at the conclusion that "this syndrome of clinical symptoms is the result of a circumscribed simple serous leptomeningitis localised about the tip of the pyramid and caused by the diffusion of the infection in the tympanum." In the case described the extension of the infection to the nerve-sheath came probably by way of the labyrinth as shown by the rapid subsidence of the paralysis after good drainage of the labyrinth was established. Functional tests showed very slight, if any, hearing in the affected ear, and Weber's test was referred to the normal ear; bone-conduction on the affected side was repeatedly tested and found increased, which was contrary to expectation and is looked upon as inexplicable.

The occurrence of abducens paralysis in acute suppurative otitis media may reasonably be assumed to mean an inward diffusion of the tympanic infection.

Dundas Grant.

Knapp, Arnold.—*Serous Meningitis.* "Archives of Otology," vol. xxxv, No. 1.

A case is described illustrating the fact that even in the presence of symptoms referable to increased brain-pressure we are sometimes agreeably surprised by recovery from an exceedingly grave condition after an operation which has failed to reveal any lesion of the cerebral structures, and consisting simply in the evacuation of an excessive amount of cerebro-spinal fluid. The patient was a youth aged eighteen, who had had a discharge from the left ear for three weeks and developed such symptoms as slow pulse, retarded cerebration, headache, and optic neuritis, suggesting increased brain-pressure. The mastoid antrum and tympanum were freely exposed by operation and the roof of the tympanum and antrum was removed, but the dura over the temporal lobe was healthy and pulsating. The lateral sinus was then laid bare and the dura above the bend was found to be thickened, discoloured, and readily bleeding. All the main structures were explored with negative result, but when the dura was opened, just posterior to the sinus, a gush of cerebro-spinal fluid took place and this continued in large quantities. Gradually the headache disappeared, and the patient's mental condition became brighter. Another case is narrated in a girl, aged sixteen, suffering from chronic purulent otitis; caries of the labyrinth and numerous intra-cranial com-

plications were present; symptoms of purulent meningitis developed later, and lumbar puncture evacuated a large amount of clouded fluid under pressure. The case, however, recovered as the result of operation on the middle-ear cavities and labyrinth, as well as the release of the cerebro-spinal fluid.

Dundas Grant.

Scheibe (Munich).—*The Therapeutical Aspect of Acute Inflammations of the Middle Ear, with Reference to their various Etiology.* "Münch. med. Woch.," May 22, 1906.

The writer divides them from the clinical point of view, into "imperforative" and "perforative," the perforation depending on the quantity and consequent pressure of the secretion. He distinguishes from the inflammations the exudation resulting from pure tubal catarrh in which there is indrawing of the membrane and a transparent fluid in the tympanic cavity. The invariable treatment adopted before perforation was the use of the air-douche and in case of any tenderness on the mastoid process the application of the ice-bag. Bodily and mental repose was ordered and alcohol forbidden. As the inflammatory symptoms in the ear were more marked when the head was horizontal, patients were only confined to bed when there was high fever or depressed general condition. The indications for paracentesis were bulging of the membrane, in case of pain, and mastoid tenderness, with lowering of the hearing to something under half a metre for the whisper. Paracentesis was always followed by the air-douche. When discharge was present the meatus was syringed daily with a 4 per cent. boracic solution; Politzer's inflation was then practised and the meatus carefully cleansed with absorbent wool; boracic powder was insufflated, and the meatus loosely closed with cotton-wool; the cotton-wool was renewed whenever it was found to be soaked with pus. (Insistence on the use of the air-douche is remarkable in view of the experiments of Young and Milligan.) In regard to prognosis, cases were divided into two groups, the primary and the secondary, the latter resulting from general constitutional disease and the former independent of such. Out of 272 cases of acute inflammation of the middle ear which came under treatment at an early stage, 98 per cent. resulted in recovery, less than 1 per cent. had a fatal ending, and 0.3 per cent. lapsed into chronicity; complications took place in 5 per cent., in half of which the mastoid had to be chiselled open. Of the primary cases all recovered with normal hearing, none became chronic, and only 3 per cent. experienced complications, the chiselling operation being only necessary in $\frac{1}{2}$ per cent. The secondary cases ran a somewhat less favourable course; only 94 per cent. ended in healing, 2 per cent. in death, of which one was a case of diabetes with meningitis and the other one of scarlet fever with pyæmia; 1 per cent. became chronic or, at all events, had persistent defect of hearing; in 8 per cent. complications came on, and these were of a more serious nature than in the primary cases, so that ten times as many had to be chiselled. In young infants suppuration lasted longer than in older children or in adults, attributable in part to the narrowness of the auditory meatus, perhaps also to the persistence of the embryonic mucous mass in the tympanum. The presence of adenoid vegetations appears to have considerable influence, as otitis media in patients with these growths was followed by perforation of the tympanum more frequently than in others. Scheibe explains this by the interference with the normal ventilation of the middle ear produced by the obstruction to the Eustachian tube caused by the adenoids, through hyperæmia

ex-vacuo, with transudation of serum out of the blood-vessels in the middle ear and at the same time diminished absorption of inflammatory secretions. He thinks that the beneficial effects he attributes to the air-douche are thus explained.

Dundas Grant.

REVIEW.

The Anæsthetic Technique for Operations on the Nose and Throat. By A. DE PRENDERVILLE, M.R.C.S. Many Illustrations. Demy 8vo, cloth, price 3s. 6d. London: H. J. Glaisher, 57, Wigmore Street, W. 1906.

This work of eighty pages describes very fully the special duties of the anæsthetist in dealing with throat and nose operations. The writer, after several years of continuous work with a number of throat surgeons, has thoroughly grasped what is required of him in the double rôle of administrator and chief assistant. Since it is the duty of the anæsthetist in these cases to keep the air-way free both by the use of the sponge and by the posture of the head and arrangement of the tongue and lower jaw, it is very necessary that he should have definite guiding rules, and these will be found in this book.

After examining the patient and learning the nature of the operation, he should be able to use his own judgment in the selection of the various drugs, mixtures, and sequences, and the anæsthetist who has no special experience in the matter will do well to follow the writer of this work in making his choice. About half of the book is devoted to the subject of administration in the sitting posture. Probably nothing has done more of late years to advance nasal surgery than the adoption of the sitting posture for chloroform narcosis, and yet at many general hospitals it is difficult to obtain the services of an anæsthetist who does not regard it as a somewhat risky experiment. Many rhinologists will, therefore, be glad to have Dr. de Prenderville's book to lend to less experienced anæsthetists with whom they may be officially associated, for it contains a very definite and detailed description of the method, together with a discussion of its advantages and disadvantages in certain cases, and of the precautions which must be observed. After reading this work no professed anæsthetist will care to say that the sitting posture has not long since passed out of the region of experiment, for he cannot fail to recognise that the author is drawing on a prolonged and varied personal experience of his subject. The book is very readable, and the use of leaded type for the cardinal points, besides serving the purpose for which it is intended, gives the surgical reader evidence that the writer has grasped what is essential to a successful administration.

BOOKS RECEIVED.

H. Lambert Lack, M.D. *The Diseases of the Nose and its Accessory Sinuses.* With 124 illustrations. Royal 8vo, price 25s. London: Longmans, Green & Co. 1906.

Professor A. Ouodi, M.D., and Professor A. Rosenberg, M.D. *Die Behandlung der Krankheiten der Nase und des Nasenrachens.* Illustrated. Price 8 mk. 50; bound 10 mk. Berlin: Oscar Coblentz. 1906.

THE
JOURNAL OF LARYNGOLOGY.
RHINOLOGY, AND OTOTOLOGY.

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A NEW OPERATION FOR EXTREME CASES OF SEPTAL DEFLECTION, WITH PRESENTATION OF A SUCCESSFUL RESULT IN AN ADULT CASE.¹

BY J. PRICE-BROWN, M.D. (TORONTO).

IN the wide domain of general operative surgery the object has always been to remove only organs and tissues that are diseased. When displacement is the principal condition presenting itself, the organ being still histologically normal, it has been the rule to make the restoration of that organ to its normal position the chief object of surgical treatment. This truth is so universally recognised among surgeons that operations upon the various organs and regions of the body are done much in the same way all the world over, the difference in technique being more in relation to the principles of hygiene adopted by the surgeon than the method in which he does the operation.

This, however, cannot be said with regard to that little plate of bone and cartilage which we term the nasal septum. This troublesome and seemingly insignificant little body has a persistent habit of getting twisted and turned out of its normal position—not by its own will but by the will of the surrounding tissues. It is a victim of circumstances over which it has no control, and being crowded out of the place that it should occupy, it has been pleading with the rhinologist for generations for the restoration of its vested rights.

The pleading, in a measure, has not been in vain. For more

¹ Read at the annual meeting of the American Laryngological Association, Niagara Falls, May 31, 1906.

than a score of years rhinologists have been vying with each other in the advocacy of various operations to give the desired relief. I need not enter into an enumeration of these, for their name is legion. Each has been attended by a certain measure of success. Probably all of them have been followed by good results in minor cases, and some by excellent results in cases that were extreme. Still, the outcome has not been what rhinologists have been so earnestly seeking—a reliable means by which extreme deflection could be readily removed and the cartilaginous septum returned to its normal plane. Any definite method by which this could be accomplished in a large percentage of cases would have been accepted, it is safe to say, by a majority of surgeons with open arms as the ideal operation; and they would not have turned so enthusiastically toward the removal of the cartilaginous septum as the best method of treatment, particularly when such treatment is a contradiction to the rule already mentioned, namely, to replace and not to excise normal tissue. I refer to the window operation, or submucous resection of the cartilaginous septum, which during the last two or three years has been widely accepted as the operation *par excellence* for the removal of extreme septal deflection.

I cannot believe that when Nature has placed a large triangular or quadrangular septal cartilage in every person's nose, separating with a firm wall the one nasal cavity from the other, that it can be removed in a wholesale manner with impunity, a membranous septum being left in its place. Yet this is the ideal operation of to-day, so ideal that several operators with marvellous technique have each removed from fifty to a hundred septal cartilages already. Being skilled men, the large majority of these operations have been successful, that is, the surgeon dissected back the mucous membrane with more or less of the perichondrium from each side and then removed the cartilage without perforation. Still, all the operations of these skilled men have not been without failures. We are told in the *American Journal of Surgery* for June, 1905, that the originator of the modern method had 12 per cent. of permanent perforations, that another operator had 20 per cent., and that yet another, and he one of the most brilliant surgeons of the day, had six perforations out of his first fifteen cases.

In the *Laryngoscope* for April this year the statement is made that the flap operation is often attended by perforation, and that Killian, one of the most skilful and successful of operators, had declared that the management of the lowest part of the septum is "most difficult"; also that in the Hajek operation "the columna

is entirely unsupported and may be drawn up into the nose by the contraction of the membranous septum with very noticeable deformity."

Yet the submucous operation has been so widely practised, and so much has been written upon it, that every rhinologist is dreaming of his first ideal operation; and if our established men—surgeons who have been operating for many years—can so frequently, though unintentionally, make successful punches through the septum, what may be expected of the new man, who is simply rubbing his palms together in hope of the opportunity of displaying his brilliancy?

The point might be pressed even farther. Is it wise to remove the great mass of the septal cartilage in so many successive cases, even when the operation is brilliantly and beautifully done, resulting in perfect healing of the two folds of mucous membrane, back to back? This operation, in its largeness, has only been done during the last two or three years. What will be the effect upon these weakened septa in the long years of the future? for many of these patients will live twenty, thirty, or forty years yet. We know how weak an organ the septum is, for we frequently find it perforated even without operation, and when perforated it always occasions more or less distress to the patient. How will these membranous septa stand the aridity of the fevers, the typhoids, and the pneumonias of the future? And will there not be a much larger percentage of perforations among the people during future years if every rhinologist considers it his duty to do a submucous resection in every case of severe septal deformity?

It is in the light of these conditions that I venture to offer still another method of treatment for consideration, one in which the septal cartilage, when in extreme curvature, instead of being removed, can be relieved of all tension, and replaced with perfect healing in the central plane position. If this claim can be sustained it should be a better operation for the patient than the removal of the cartilage by submucous resection, no matter how excellently or scientifically this may be accomplished.

My former method, which I practised for years, was with a thick saw, to make two longitudinal cuts from before backwards through the septum. These were made obliquely from the convex side, and were about half an inch apart, passing through both mucons membranes, the lower cut being just above the superior maxillary ridge. This diminished the tension of the septum and enabled the operator with finger and spatula to force the central

portion, as well as the adjacent margins, to their normal position. It did not, however, remove the central resiliency of the long curvature from before backwards. Still, my practice was to insert at once a pure rubber splint of sufficient thickness to retain the septum in its new position. The rubber being smooth, aseptic, compressible, and incapable of absorbing germs, was allowed to remain within the nasal cavity undisturbed as long as its presence was needed, cleansing being regularly attended to above and below the splint. In these cases good results were always obtained, but they were not perfect and the treatment was too prolonged.

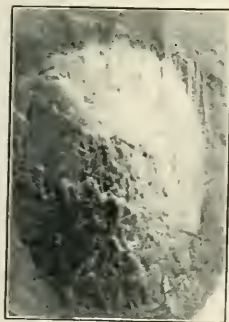
Hence, to secure better and quicker results, I have added to the two cuts already mentioned still another one. That is, to remove the antero-posterior tension, I have made a cross-cut completely through both mucous membranes and cartilage and extending beyond the other two cuts, converting the two straight lines into the figure of **H**. Hence this method of treatment might be called the "H operation" (figs. 1—6).

The points I wish to draw attention to in reference to it are these. First, that as the curvature of the cartilage from above downwards gives it a greater width than it would occupy if it were upright in its normal position, the two longitudinal cuts should be so managed as to remove two long slips of the septal cartilage; and at the same time be made at an oblique angle, so that the cut edges can slide over each other. Second, that the cross cut of the **H** should be very decidedly oblique, cutting through both mucous membranes and cartilage with knife or chisel, so that in replacing the segments the posterior central segment of the septum will slide forwards over its fellow and the anterior one backwards.

It matters little how these cuts are made if the principle upon which they are founded is carried out. The long strips of cartilage might be removed either by drill, or swivel-saw, or knife, or ordinary saw of unusual thickness, or any improved instrument specially constructed for the purpose. The cross-cut can be made by either chisel or knife.

The immediate result of the combined cuts when made completely through both mucous membranes and cartilage is that all tension is removed, that two rectangular flaps are made by the **H** incision, the basic blood-supply of each being retained, and that they can with ease be pressed into the normal position, their edges sliding over each other. When I first did the operation I imagined that I would require to forcibly fracture the posterior

1. Posterior end.



2. Posterior end.



3. Posterior end.

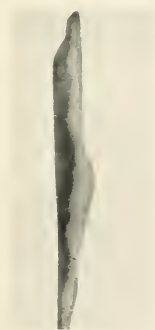


Anterior end.
Dome uncut.

Anterior end.
Cap unpressed
after the H cuts.

Anterior end.
Cap pressed
into place.

View from the side.



4. Anterior end.
Dome uncut.

5. Anterior end.
Cap unpressed
after cuts.

6. Anterior end.
Cap pressed
into place.

The same. View from above.

RUBBER COPIES OF EXTREME SEPTAL DEVIATION.

To illustrate Dr. Price-Brown's paper on "A New Operation for Extreme Cases of Septal Deflection, with Presentation of a Successful Result in an Adult Case."



piece at its base; but this was entirely unnecessary. The pieces will bend easily, and sliding over each other, are readily adjusted, to be retained in position by the use of the invaluable rubber splint, a single one on the convex side being the only one needed.

Through the kindness of a gentleman who came with me from Toronto, I can now present to you a case for examination after successful treatment by this method.

The patient, aged twenty-six, was referred to me for treatment on November 8, 1905. His history is briefly as follows: He was perfectly well until ten years ago, when he fell off a ladder from the height of twenty feet, striking his chin and injuring himself severely. After his recovery he was troubled with mental irritability and lack of power of concentration, both being attributed to the effects of the fall. No one suspected that his nose had been injured. After several years, as partial alienation continued, he went to Texas with the hope that the climate might benefit his health. He remained there for three years, when his condition became aggravated, and in March, 1905, he found it necessary to return home.

He next went to England, and last June was referred to Lambert Lack for advice, who at once said that his nose was at fault and that an operation was urgently required. This, however, was deferred until he came back to Canada, when he was placed under my care for treatment.

On examination, I found narrow, slit-like nostrils with almost complete nasal occlusion on the left side, caused by semi-globular curvature of the cartilaginous septum, which in the central part was attached to the inferior turbinated. On the right side there was a deep, irregular, angular cavity, which was filled by a compensatory hypertrophy of the inferior turbinal, making that side almost as occluded as the other. There was a stale malodor from the secretions, complete anosmia, and some muco-purulent discharge. On using the rhinoscope, the posterior end of the septum was found to occupy a nearly normal position.

The first operation was to reduce the size of the right inferior turbinal. This being done, several days were allowed to elapse, then the septum was operated upon at St. Michael's Hospital under chloroform anæsthesia, solutions of cocain and adrenalin being also applied to the convex side to shrink the tissues and increase the space required for operation.

As I purposed doing all the cutting from the left or convex side, I first inserted a wide strip of rubber one eighth inch thick in the right or open cavity as a protective. Then the two longitudinal

cuts were made with a thick nasal saw, and the cross-cut to complete the H operation was done by mallet and chisel. All the cuts were bevelled and penetrated completely through the septal cartilage and both mucous membranes.

Next, with a blunt dissector the central part of the convex side was separated from the outer wall, and the index finger passed in. The parts were all readily adjusted, the resistance to movement was slight, and once in place, a broad rubber splint three eighths of an inch thick was inserted to retain the fragments in position until union could take place.

Bleeding was comparatively slight. The temperature rose the following day to 100°, but the next day it fell again and continued normal throughout the treatment, which consisted chiefly in leaving the splint in position and removing the secretions by the use of aseptic absorbent cotton often enough to prevent accumulation.

There were a couple of slight scissor operations, subsequent to the major one, and while the splint was still in position. These were to remove redundant tissue below the site of operation. I did not remove the splint until it came loose, which was on the twenty-fifth day, then it slipped out easily without traction or bleeding. The passage was wide and almost normal in appearance. No ulceration was present, and cartilaginous union had taken place. The sense of smell had already returned.

There was, however, a bony maxillary ridge remaining. But I delayed removing it until January 2nd, six weeks after the operation upon the septum, lest the use of instruments might weaken the rigidity of the latter. From this time forward progress has been uninterrupted. The patient has free and equal respiration through both nostrils. His septal cartilage is firmly fixed near the centre, and there is no probability of it ever occasioning future trouble. His physical health is restored. Hebetude has disappeared, the nostrils have become wider, and he is able to enjoy life better now than he has done for years.

I do not claim that the operation done in this case was perfect, but I do claim that the philosophy upon which the H operation is based is sound; and considering the many years that the patient is likely to live, the treatment adopted was much better for him than any submucous window operation could have been, and I commend the method to you for consideration.

FIBROMATA OF THE NASO-PHARYNX AND THEIR REMOVAL BY ENUCLEATION.

By A. J. BRADY, L.R.C.P.I., L.R.C.S.I.,
Hon. Surgeon Sydney Hospital, Department for Diseases of the
Ear, Nose, and Throat.

FIBROMA of the naso-pharynx is recognised as a grave disease, and many methods have been devised for dealing with it. Some of these are tedious and ineffective, and others, such as removal of the superior maxilla as a step of the operation, while sometimes effective, are attended with grave mutilation. The severe and dangerous hæmorrhage which attends any interference with these tumours is the main difficulty which confronts the surgeon. Any attempt to remove them piecemeal is attended with such severe bleeding that it must fail. The cold wire and the galvano-cautery snare are unsuitable. It is almost impossible to get the wire loop to hold on a broad-based tumour, and at the best only a portion of the growth is removed by these means. To cut through such a mass of dense fibrous tissue with a cold snare is a matter of great difficulty, and it is possible that the galvano-cautery snare would predispose to secondary hæmorrhage. Injections of various chemical substances, and the application of electrolysis, while reported as sometimes successful, is at the best only an unsurgical procedure, and causes the patient much pain and distress.

The writer is acquainted with a man who, in his early life, was treated in this manner. After several years of suffering the growth was eventually destroyed, but the memory of the process is a nightmare to him, and the soft palate was so injured that he now speaks as if he had a cleft palate.

The writer, recognising that the vascular region of the growth is its capsule, conceived the idea of removing it from its bony attachments with as little as possible interference with the capsule till the bony attachments are separated. It is then possible, by seizing the growth in the naso-pharynx with a strong vulsellum forceps, to separate it from its attachments to the capsule, partly by enucleation from the latter and partly by tearing portions of it across. This part of the operation requires to be done fairly rapidly to avoid excessive hæmorrhage, which ceases as soon as the growth is separated. Marine sponges on holders ought to be at hand so as to control undue bleeding by pressure during the steps of the operation, and immediately the growth is delivered from its attachments a sponge of suitable size ought to be held

firmly pressed in the naso-pharynx for a few minutes. No after-plugging was found necessary. A periosteal elevator is used to separate the growth from its bony attachments. The periosteal elevator ought to have a broad face and a large handle to give a good grip and control of the instrument. Langenbeck's elevator (1747, Mayer and Meltzer's catalogue) is a suitable type.

The first patient was operated on ten years ago by the writer in this manner in the Sydney Hospital. He was a boy aged nineteen, with a naso-pharyngeal fibroma. Under chloroform anæsthesia a preliminary tracheotomy was performed and a sponge inserted over the larynx. To gain room for the use of the periosteal elevator an incision was carried down in the angle between the cheek and the nose and into the nostril; another incision, joining at right angles with this, was carried outwards for about two inches. The soft parts, including the periosteum, being separated from the bone and drawn outwards, enough of the nasal process of the superior maxilla was removed to allow the finger to pass through the nostril; this gave ample room to reach the base of the growth. The index finger of the left hand was inserted in the naso-pharynx, and the periosteal elevator was passed through the nostril from the front; the face of the elevator, guided by the finger in the naso-pharynx, was kept close to the bony attachments of the growth, which were rapidly separated by a pushing movement of the instrument, as in separating periosteum from bone. When the attachments to the bone were separated the growth was seized in a strong vulsellum forceps and drawn out through the mouth; the incision in the face was closed in the usual manner. This man returned at intervals for two years for inspection; there was no recurrence, and the slight scar on the face is hardly noticeable.

The next case, a boy aged eighteen, had a large fibroma of the naso-pharynx completely blocking this space and pressing the soft palate downwards. Guided by the experience of the former case, a preliminary tracheotomy was not performed, as it was evident that the danger of blood getting into the air-passages during the operation was not so great as was anticipated. The usual procedure to gain room in one anterior naris was followed, the nostril in which a prolongation of the growth existed being chosen for this purpose. The head was then drawn over the end of the table in Rose's position, and the growth having been rapidly separated from its attachments to the bone, it was seized in the naso-pharynx with a strong vulsellum forceps, and wrenched from its attachments to the capsule. At this moment a strong rush of blood took place. A

sponge was held firmly pressed in the naso-pharynx, and in a few minutes when the sponge was removed bleeding had ceased. This patient made a speedy recovery, and there has been no recurrence.

The third case was a boy aged twenty, with a broad-based, sessile fibroma of small dimensions operated on twelve months ago. No recurrence.

Nine months ago the fourth case, a boy aged ten, was operated on by the writer at the Sydney Hospital. Before he was seen by the writer the growth had been mistaken for an adenoid and a futile attempt made to remove it. Here a departure from the former procedure of gaining room by widening one anterior naris was departed from. The boy was chloroformed, and the head drawn over the end of the table. The periosteal elevator was carried along the floor of the right nostril, in which a prolongation of the growth existed. The growth was stripped from the bone with the elevator, but a good deal of difficulty was experienced in detaching it from its capsule, which was composed of a firm layer of the pharyngeal aponeurosis. The growth was intimately attached to this by making firm traction on it with a strong vulsellum forceps through the mouth, and using the elevator through the nose guided by the finger in the naso-pharynx, it was stripped from its attachments and came away in one complete mass. The operation occupied between fifteen and twenty minutes. The hæmorrhage, although free, was not excessive, but a considerable degree of shock followed the operation. A subcutaneous injection of normal saline solution was given, and hot bottles were applied. Recovery was uneventful, and he left the hospital in ten days, feeling quite well. By posterior rhinoscopy the naso-pharynx and posterior nares showed no trace of the growth, and the parts had healed so smoothly that there was little evidence that a growth had been removed. The growth, preserved in spirit, is somewhat pear-shaped, very dense in structure, measuring two inches in its long diameter and three inches in circumference. It appears a complete unbroken mass, as if it had been shelled out of a capsule. Portions of its tough envelope are attached to it here and there, having been torn across rather than separated from the growth during its removal. A microscopic examination of a section showed the usual characters of a fibroma.

This method of operating differs from those usually practised in that there is no mutilation, as where the superior maxilla is removed in order to gain access to the growth—the enlargement of the

apertura pyriformis giving sufficient room for this purpose—the periosteum being preserved a firm closure takes place on healing. No cutting instrument is used in the separation of the growth, which is stripped from its bony attachments and enucleated from its capsule with the periosteal elevator as described; thus no portions are left behind to favour recurrence, and the danger of hæmorrhage is lessened.

Other methods, such as dividing the soft and part of the hard palate to gain access to the growth, have obvious drawbacks, as intonation may be permanently impaired.

The various other methods, such as snaring, injecting with chemicals, etc., need hardly be considered. The snare at best will remove only a portion of the growth, and the other methods lead to prolonged distress and mostly fail to cure.

Case four shows that a large growth can be successfully removed entirely through the natural passages without incision of any sort, yet this method of operating is not recommended for general use, as by enlarging the apertura pyriformis in the manner described the growth can be more rapidly separated from its attachments, thus lessening the risk of hæmorrhage, which is the main danger in these cases. It is claimed for this operation that the results, compared with other procedures for the removal of fibromata of the naso-pharynx, are favourable. Four cases were operated on with complete recovery in each; although this is not a large number, it is enough to render the method worthy of consideration. It is not to be lost sight of that in operations for this grave condition fatalities may occur whether this or any other method of operating be followed. Bosworth ("Diseases of the Nose and Throat") quotes statistics of 58 cases collected by Lincoln. Of these only 19 are reported as cured; 10 died; recurrence took place in 16 cases; in the remaining cases the record is incomplete.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Twenty-eighth Annual Congress, held at Niagara Falls, N.Y., May 31 and June 1 and 2, 1906.

President, JOSEPH W. GLEITSMANN, M.D.

First Day, Thursday, May 31.

PRESIDENT'S ADDRESS.

DR. GLEITSMANN referred to the first meeting of the Association twenty-eight years ago in the neighbouring city of Buffalo and rejoiced in the thought that thirteen of the original founders are still alive and active members. He drew attention to the enormous progress laryngology and rhinology have made, since he began his studies in 1867 and 1868 under Leopold v. Schrötter at Vienna, and gave full credit to the members of the Association for their share of contributing to the advancement of their specialty. At the same time, he emphasised the necessity not to forget to elevate laryngology to the standard it deserved, and to raise it on a par with other medical branches at Medical Congresses and at Universities.

The subordinate position laryngology was accorded, with very few exceptions, at the International Medical Congresses, and the repeated fruitless requests for representation as a full section, were the primary, moving factors to initiate an International Laryngological Congress at Vienna, 1908, in conjunction with the Türk, Czermak Festival. A large number of laryngological societies of different countries have expressed their approval and many prominent laryngologists promised their appearance.

In twenty-nine Universities of the United States, having the largest number of students, laryngology was taught by a regular professor in fourteen, in nine by clinical professors or instructors, in six there was no chair for laryngology. Compared with the continental Universities of Germany, Austria, and Switzerland, B. Fraenkel's assertion in the *Internationales Centralblatt*, July, 1905, is according to Minerva of 1905 still true, viz.: "We have not yet a regular professorship for laryngology," with the exception

of Rostock and Basel, where a regular Professor teaches laryngology and otology combined.

Referring to subjects concerning the Association, Dr. Gleitsmann was glad that no active Fellow had died during the past year, and he gave a short biography of a former member, one of the founders of the Association, Dr. Carl Seiler. He alluded to the harmonious meetings of the Council, and the excellent, painstaking work done by the Secretary, and concluded with a brief *résumé* of fruitful work to be done in the future in the different lines of biological and pathological researches, in tracheoscopy and bronchoscopy, the subject for general discussion at the present meeting, and advocated the performance of laryngotomy in suitable cases by the laryngologist himself, being a source of greater satisfaction to relieve a patient by his own act than to turn him over to a surgeon.

How far are Abnormalities of the Nasal Septum responsible for Malfunction of the Nose?

Dr. HENRY L. SWAIN (New Haven, Conn.) described the usual provisions of Nature for keeping the nasal passages free from irritating and harmful materials. Macroscopic particles are taken care of with comparative ease, but as much is not known about microscopical particles. In the latter instance the protecting duty falls on the cells whose chemical or phagocytic functions are called into play. The protective system may be rendered useless by deformities of the nasal skeleton which render ready cleansing by sneezing and blowing and the free downward flow of fluids practically impossible. In these circumstances bacterial growth in the nose may occur with great rapidity. The nasal integrity depends, after all, on the condition of the epithelial cells on the outer wall. As a result of repeated attacks of acute rhinitis a chronic change is set up and the protective mechanism becomes permanently impaired. The author does not think it logical to lay all the blame of this impairment, as is commonly done, on the nasal septum. Its influence on nasal function in states of deviation from the normal perpendicular has been over-estimated. Septal deviations are often the outcome of inherited facial asymmetry or arise from exaggerations by the accidents of disease, neglect of teeth, trauma in youth, etc., yet many patients having the misshapen septa live ordinarily long lives without any more nasal disturbance than is experienced by patients having comparatively

straight septa. The present views as to the relation of septal abnormalities to nasal mal-function are the natural result of the teaching of recent years. If the septum is so bent as to actually interfere with breathing, there is no doubt as to the course to be followed; but whatever is done, the desired result should be accomplished by as mild measures as possible, with as little destruction of the normal epithelium and with as good preservation of the normal anatomical relations as possible. The author stated that he could not make it seem right to remove turbinal tissue when an exostosis was at fault. It might be easier but it was not logical. Neither was it right to remove turbinal tissue when the problem was to make crooked septa straight. Yet after much experience one is sometimes met with the fact that although there may have been done at the time what seemed best, the catarrhal condition for which relief had been sought had not been greatly benefited. One should not fall into the habit of laying the whole fault for the catarrh on a slight septal bend. The catarrhal condition is referable in part at least to the conditions of modern life—dry heat, narrow apartments, late hours, and busy work. Often, then, the main thing to bring about is an alteration in the manner of living and a change in environment. By confining the treatment to surgical intervention ultimate results would be disappointing. One might straighten the septum, plane it off, smooth it down, but yet hypertrophy might return, annual catarrhs continue, and sinus disease occur in spite of all.

Dr. W. E. CASSELBERRY thought that the Association had always taken a conservative position on the question of mechanical interference with the septum. If the septum were the whole cause of intra-nasal troubles the rhinologist would be only a carpenter. It was not the whole cause, though doubtless the influencing condition.

Dr. C. W. RICHARDSON desired to commend the general position taken in the paper and deprecated operations on the septum simply because it was misplaced or presented a contour not absolutely normal, or had some growth on its surface. The introduction of the new submucous operation was, he feared, responsible for many unjustifiable operations.

Some Observations on Non-Traumatic Perforations of the Septum.

Dr. CHARLES W. RICHARDSON referred to cases without a known etiological factor and with an indefinite pathological history. In none of this group could the exciting cause be the irritation from

acids or chemicals. In only a few was there any history of obstruction. It is known that when the anterior inferior portion of the septum is injured Nature's efforts at repair are very unsatisfactory. In addition to the exposed situation of this area there seemed to be some additional constitutional condition lessening the normal nutritive activity of the affected structures, so that ordinary irritation worked an unexpectedly great destruction. Such a constitutional influence is seen in typhoid fever, for instance, and the author believed that in those inclined to tubercle especially there was something imparted to the tissues, particularly of the fibrous and epithelial type, which rendered them, when the nutritive changes were impaired, liable to retrogression and destruction. In an analysis of fifteen personal cases there was found in eleven either direct physical evidence of tuberculosis in the patient or there was a definite family history of this diathesis. Findings made on the cadaver by Weichselbaum and Hajek confirmed the view taken. Many cases of septal irritation are not followed by perforation. Many endure for years, some heal, and some may perforate; but tuberculosis and the tuberculous diathesis impress on various tissues of the body such alteration in their nutritive processes that when the proper stimulus is applied they lead to degenerative changes, which may or may not show the characteristic histological elements of tuberculosis.

Dr. EMIL MAYER inquired whether the cases having tuberculosis had an initial epistaxis.

Dr. C. F. THEISEN had observed perforations following circumscribed abscess of the quadrangular cartilage. Some of them had come on without apparent cause.

Dr. J. O. ROE regarded syphilis as responsible for more than three quarters of all the perforations coming under his observation. Next to that came tuberculosis, and then the eruptive fevers.

Dr. A. B. THRASHER considered syphilis as the great cause of perforations in the septal bones, but not in the cartilages. He could not agree with Dr. Richardson as to the frequency of the tubercular factor in these cases. Minute perforations might be caused by foreign bodies becoming lodged on the septum and being then picked off, with the result of producing an open spot for infection.

Dr. W. E. CASSELBERRY believed that those cases limited to the cartilage and presenting septal edges thicker than the inner thickness of the cartilage were syphilitic.

Dr. J. L. GOODALE believed the process was a gumma of the mucosa.

Dr. RICHARDSON said, in reply to Dr. Meyer, that an ulcer was liable to bleed at any time, and that no claim had been made that the patients with tuberculosis had had an initial epistaxis.

Nasal Skiagraphy.

Dr. CORNELIUS G. COAKLEY, of New York City, gave an exhibition of skiagraphs showing various diseased conditions and anomalies of the nasal accessory sinuses and described the technical methods employed in their production. He was of the opinion that while in certain instances the results of this method of diagnosis might be very uncertain, yet in other instances it afforded very definite information as to the size, shape, and relations of the sinuses, and gave also very definite information as to the condition of the mucous lining.

The Ultimate Results of Radical Operations upon the Accessory Nasal Sinuses.

Dr. D. BRYSON DELAVAN, New York City, commented on the fact that relief has not always been finally afforded by radical operation, that the progress has often been painfully slow, and the ultimate outcome unsatisfactory and disappointing. Unsuccessful cases are not often reported, and statistics calculated to show the relative values of different methods of operation are not attainable. There have been notable exceptions to this rule in the case of the work of some members of the Association, who have frankly stated their actual results. In some instances the nasal cavity has assumed a condition to all intents normal as to sensation and function, yet the patient has been unaware of any unusual change in it, and the progress of time has been unmarked by semblance of accident or relapse. In other cases the results have not been so fortunate. Sometimes the cure itself has been incomplete, or, again, new foci of disease have developed, at times long after every probability of their appearance has passed away. The ultimate condition is a subject which apparently has been studiously avoided. It cannot be denied that the results in many cases have been brilliant and permanent, but sometimes the formation of crusts persists for years after intra-nasal operation. The undue widening of the nasal cavities may cause the many unpleasant symptoms due to the too free admission of air. A better knowledge of all these results is highly desirable, because—first, if the seriousness of the situation

has been over-estimated it is well that we should be reassured; secondly, if it has not been over-estimated the best means for its prevention should be studied and applied. Most important of all, through a clear understanding of the dangers, difficulties, and discomforts of these more radical cases, the profession will be led to appreciate more fully their importance; and by prophylaxis of the causes of acute sinus disease and early recognition and efficient treatment of it when it has once appeared, to cure the condition, and thus reduce to the lowest possible number the cases which have become fully and hopelessly established as chronic. The establishment of necrosis calls, of course, for the removal of offending tissue. Great responsibility rests upon the practitioner who first sees the case, particularly during *grippe* seasons, when so much can be done to make the patient comfortable, to lessen the severity of the inflammation, and to prevent the establishment of the later features of neglected sinus disease. So, also, the possible influence of a specific factor in a given case should lead us to administer the iodide, neglect of which precaution may lead to widespread disaster. In any event, reasonable conservatism in operation and prolonged observation of every case are factors which are indispensable.

Dr. EMIL MAYER referred to the persistent neuralgic pain following antral operations.

Dr. J. H. BRYAN had not met any cases of such neuralgia. Crust-formation would often persist in a mild degree, but could be easily controlled.

Dr. W. E. CASSELBERRY believed that failure after many so-called "radical" operations was due to the fact that they had been incomplete operations, and in reality not radical enough. All foci of disease had not been removed.

Dr. DELAVAN said in closing that the expression as "radical as possible" really meant radical enough to effect a cure.

A New Operation for Extreme Cases of Septal Deflection, with Presentation of a Successful Result in an Adult Patient.

Dr. J. PRICE-BROWN, of Toronto, made a plea for the retention of the substance of the septum, and was not inclined to grant all that the advocates of the submucous resection claimed for the latter procedure. Many cases of perforation had been reported even in the hands of skilled operators. One did not know what would be in future years the condition of these resected septa, nor how the latter would stand the aridity of fevers, typhoids,

and pneumonias. Therefore the ideal result would be to so act on the septum as to relieve it of all tension without removing it, and to replace it with perfect healing in the central plane. The author had been in the habit of making two longitudinal cuts with a thick saw from before backwards through the septum, making them from the convex side about half an inch apart, passing through the mucosa on both sides, the lower cut being just above the superior maxillary ridge. Rubber splints were then employed to hold the septum in the correct position. Results were fairly good, but the cuts did not destroy the central resiliency of the large curvature from before backwards. Therefore the author had joined the two incisions by a third one at right angles to them, and the operation might be called the **H** operation. The points to which he wished to draw attention were these: First, that as the curvature of the cartilage from above downwards gives it a greater width than it could occupy if it were upright in its normal position, the two longitudinal cuts should be so managed as to remove two long slips of the septal cartilage and at the same time be made at an oblique angle so that the cut edges could slide over each other; second, that the cross of the **H** should be very decidedly oblique, extending at right angles beyond both of the other and parallel incisions and cutting through both mucosas and cartilage, so that in replacing the segments the posterior central segment would slide forwards over its fellow and the anterior one backwards. It matters little how these cuts are made if the principle on which they are founded is carried out. (The clinical history of the case was then read and the patient was examined by the gentlemen interested.)

Dr. EMIL MAYER thought that Dr. Brown's operation was mechanically a double Asch operation. On general principles he was of the opinion that the submucous operation is the best one yet devised. Cases should be selected, however. He had been unable to operate satisfactorily in this way on very young children, and had not been able to secure good anæsthesia from cocaine alone when it came to working on the bony portions. One case was mentioned of cocaine intoxication.

Dr. OTTO T. FREER championed the submucous operation, and said that he had had no difficulty with children even under local anæsthesia. He had examined Dr. Brown's case, and did not feel satisfied with the result. The more he operated the more inclined he felt to use sharp rather than blunt instruments, as he believed the former less painful. He also believed that the submucous operation was applicable to every possible form of deflection.

Dr. C. F. THEISEN employed general anæsthesia in children under fifteen years, using the recumbent position and strong electric illumination. If the deviation was confined to the cartilaginous septum the Asch procedure was good, but if the bone was involved the submucous operation would give better results.

Dr. J. O. ROE believed that a great many submucous operations were being done unnecessarily. He, too, would regard Dr. Brown's operation as a modified Asch.

Dr. C. W. RICHARDSON did not believe that Dr. Brown's operation would give satisfactory results in many cases. He failed to see how it could produce a perfectly straight septum. He had been won over to the submucous operation, though not particularly enthusiastic over it at first.

Dr. J. W. GLEITSMANN referred to a new local anæsthetic known as novococaine. He had used it in nasal work with much satisfaction. It was free from the toxic effects of cocaine.

In closing the discussion, Dr. BROWN justified the positions taken in his paper. As long as normal tissue were present it was a duty to replace it in the proper position rather than to remove it. He referred to certain mechanical principles involved in septal reposition. In his patient the results so far as personal comfort and restoration of nasal function were concerned were most satisfactory.

Afternoon Session, 3.30 p.m.

The Ethmo-Turbinal Cells, Clinically Considered.

Dr. JOHN O. ROE, of Rochester, discussed the theories as to the mode of formation of these cells in the middle turbinate body, and enumerated the symptoms caused by their distension. These may be pressure symptoms or troubles of a reflex nature. The enlargement of the bone caused by the distended cell is often mistaken for a polyp. The cells are often the seat of an empyema, and the source of the pus is erroneously looked for in some one of the accessory nasal sinuses. The condition can be differentiated from an enlargement caused by growths, cysts, or simple turbinate tissue hypertrophy by the use of the probe. Puncture of a supposed polyp may reveal the exact nature of the growth. Treatment should consist in the removal of all pressure and the restoration of nasal patency. Removal of the entire turbinate may be necessary, especially if the condition is associated with disease of the posterior

ethmoid or frontal cells. If the outer wall of the cell is thin it may be forced inward, thus leading to a collapse and obliteration of the cavity in the turbinate.

Fronto-nasal Encephalocele.

Dr. FREDERIC E. HOPKINS, of Springfield, reported the history of a case of this nature. A child of eleven months was brought to him with a small swelling over the right nasal bone. It was congenital and had been regarded as a cyst. The fossa on that side seemed obstructed, and seemed to contain constantly a clear, watery fluid. Polyps had been removed from this side three months previously, giving but temporary relief. Dr. Hopkins found a mass in the right naris extending to the depth of half an inch, and apparently attached to the outer wall near the inferior turbinate. This was removed, without incident, with a cold wire snare. Examination now revealed a globular tumour at the level of the middle turbinate, about five eighths of an inch in diameter, perfectly smooth, of a greyish colour, and semi-transparent. Pressure on the swelling in the naris caused an increase of the swelling over the nasal bone outside. Diagnosis of cerebral hernia was made, and nothing further done at the time. The naris now dropped cerebro-spinal fluid at the rate of about four drops per minute. The child became ill on the fifth day, and died of meningitis at the end of two weeks. The report of the pathologist on the tissue removed was to the effect that it was doubtless a part of the meninges, as it contained more fibrous tissue and cellular elements than an œdematous polyp, which it was at first supposed to be.

Diseases of the Trachea.

A symposium of diseases of the trachea was opened by Dr. JAMES E. NEWCOMB, of New York City, who spoke of abnormalities, hæmorrhages, inflammations, and infections. A plea was made for a more extensive use of the mirror in examining the trachea. Various malformations were briefly described. Perichondritis was generally secondary to some infection, as typhoid, tuberculosis, or syphilis. Various dermatoses might occur, such as erythema nodosum, herpes, impetigo herpetiformis, erythema multiforme, lichen ruber, angeio-neurotic œdema. Acute catarrh was generally associated with that of the larynx and bronchi. Dysphagia had been by some authors regarded as a symptom of tracheal inflammation.

New methods of tracheal injection were touched on, such as that of Marangos, who injects through the nose, and Mendel, who projects the fluid against the side of the pharynx, whence it runs down into the trachea. Ozæna might occur primarily in the tube, and several instances of severe stenosis were on record from crust-accumulation. Nothing new had been advanced as to the etiology of this affection. Tracheal hæmorrhage had been reported by numerous writers, and generally as a sequel of influenza. It was necessary to follow up such cases, as they might eventually become tuberculous. But there were cases in which the blood could be seen to ooze from varicose vessels just below the glottis, while the rest of the tracheal walls were perfectly clear. Tuberculosis was generally a feeble episode only in the laryngeal and pulmonary disease it accompanied. Primary tuberculosis of the trachea, however, had been observed. True tuberculoma of the trachea had been described twenty-five years ago by J. N. Mackenzie. But few authoritative cases were on record. Syphilitic lesions found in the trachea comprised catarrh, erythema, condyloma, ulcers, perichondritis, cicatrices, and gumma. Infiltration in this region might be delayed for years. The use of the bronchoscope, as recently developed, offered the possibility of a greater definiteness of localisation of lesion. Each case called for treatment constitutionally and mechanically, according to its special requirements. It was difficult in clinical practice to separate syphilis of the trachea from that of the bronchi.

Tracheal Tumours.

This phase of the question was discussed by Dr. CLEMENT F. THEISEN, of Albany, New York. His paper was based on a study of most of the authentic cases of primary tracheal tumours on record, 135 cases being considered. Of these 89 were benign and 46 malignant. Of the former, the varieties found comprised fibroma (polyps), lipoma, papilloma, ecchondroma, and chondro-osteoma, adenoma, intra-tracheal strumor, and lymphoma; of the latter, carcinoma and sarcoma. Particular attention was given by the author to intra-tracheal strumor, ten cases of which were now on record. The majority of papillomata occurred in children, and were undoubtedly congenital. Only one genuine case of lipoma is recorded. Two cases of lymphoma and seven of adenoma were considered. Twenty-four cases of fibroma were found, fifteen of which were pedunculated. In the majority of cases they occurred

during middle life. Very little was known as to the genesis of ecchondromata and chondro-osteomata. Of the malignant growths, primary carcinoma occurred most frequently in the medullary form, but occasionally as a cylindroma. In a number of instances the growth originated in the tracheal mucous glands. One case seemed to be a malignant degeneration of an original strumor, and in this case an extensive resection of the trachea was performed. Cancer favours the male sex. Of sarcoma, the author had been able to find records of eighteen cases. While endo-tracheal operations have been performed several times, they offer little chance of permanent success. The sexes suffer alike in this form of malignancy, young people rather than old. The author then discussed the etiology, symptomatology, diagnosis, and treatment of tracheal tumours in general. An extensive bibliography was appended.

Second Day, Friday, June 1—Session at 10 a.m.

Tracheal Stenoses.

Dr. WILLIAM K. SIMPSON, of New York City, enumerated as the extrinsic causes of stenosis struma, pressure by tumours, glandular hypertrophies, emphysema pressure, aneurisms, phlegmonous inflammations of cellular tissue, extension of bone-disease, trauma; intrinsic causes were classified as cicatrices and adhesions, morbid growths and foreign bodies, inhalation of irritants and ingestion of corrosive chemicals, and inflammation leading to thickening of the tracheal walls. The author then discussed the mode of action of these various causes in detail and enumerated the symptoms caused thereby. The special symptom was the stridulous breathing. Tracheal dyspnoea has some characteristics peculiar to itself. It is inspiratory in character, the inspiration being longer than expiration; it may be laboured, noisy or wheezing; it is at times audible for a considerable distance, but has not the peculiar, brassy, croupy, stridulous sound of laryngeal dyspnoea. Diagnosis could be made by the laryngeal mirror, aided in obscure cases by X rays. Operation revealed a greater extent of stenosis than would be indicated by the mirror image. Treatment depended on the recognition of the cause. Outside of specific cases it was entirely surgical—*e.g.* tracheotomy, tracheal fissure with exsection of the stricture tissue, resection of the portion of the trachea involved, and, finally,

the various forms of dilatation. Dr. Simpson showed various models of cannulæ employed for the last-named purpose.

Foreign Bodies and Tracheoscopy.

Dr. A. COOLIDGE, Junr., of Boston, spoke of the behaviour of foreign bodies drawn into the upper air-passages, and said that the important questions—after considering the nature of the body, its probable position, and the patient's general condition—were, What is the danger of leaving it alone? next, If an attempt at removal is made is the patient's chance improved or not? and, finally, What operation shall be done? Various statistics were quoted, but the proper methods of treatment adapted during recent years render an entirely new consideration of all the foregoing points necessary. The author briefly traced the history of tracheoscopy and bronchoscopy, and discussed the physical principles involved. In the older methods the surgeon worked in the dark; with modern instruments he can see what he is doing, and inspection of the trachea and bronchi becomes just as definite a procedure as inspection of other bodily areas requiring special instruments. Modern essentials are a proper tube, a good illumination, and an instrument for extraction of the foreign body which can be easily and safely used through the tube. The author submitted various instruments and spoke of certain modifications in their employment which had proved of service to him. In closing he reported three cases in addition to the five previously reported to the Association. The foreign bodies were respectively a prune-stone, shingle-nail, and hook. All were successfully removed.

Dr. EMIL MAYER had had five personal cases of bronchoscopy and expected to publish shortly a record of his experience. In one of these cases a melon-seed had been removed from a child aged ten months. As far as he knew this was the youngest case on record. The introduction of the tube was sometimes very difficult.

Dr. E. FLETCHER INGALS had found some of the instruments on the market clumsy, if not even dangerous. He had done the upper operation some twelve or fourteen times and the lower once. He was in doubt as to the advisability of using cocaine or atropine in these cases. There had been some unaccountable cases of death following a successful operation.

Dr. J. SOLIS-COHEN thought that stenoses following tracheotomy often arose from the fact that the operation was done too high up. He had adopted the practice of using two tubes—one long and the

other short. These were changed frequently, so that the irritation from pressure did not constantly bear on the same spot. Tubes flattened laterally were preferable to round tubes.

Dr. D. BRYSON DELVAN believed that damage was sometimes done to the vagus through too much manipulation of these regions. Such damage might explain some of the mysterious fatal cases.

Dr. THOMAS HUBBARD had found that rings of cicatricial tissue sometimes formed after operation, causing dyspnœa.

Dr. THOMAS J. HARRIS said that dyspnœa was sometimes hard to account for, as no stenotic ring could be found to account for it.

Dr. JOHN C. ROE called attention to the fact that in his experience those who had had a tracheotomy done in their childhood rarely reached an advanced age.

Dr. J. W. GLEITSMANN said that the tubes in halves which Dr. Coolidge had shown had been known to turn over each other, thus rendering the manipulation of the bronchoscopy tubes very difficult.

Dr. W. K. SIMPSON said that small bodies were often expelled through the short O'Dwyer tubes by the act of coughing.

Dr. C. F. THEISEN referred to a recent publication by Schroetter, describing a bronchoscope devised after a new principle. It had been described in a recent issue of the *Wiener Med. Wochenschrift*.

Fibroma of the Larynx in a Child aged five; Apparent Cure; Recurrence as a Papilloma; Laryngo-Fissure; Cure.

Dr. THOMAS J. HARRIS, of New York, gave the later history of a case which was originally reported to the Association one year ago. The sequence of later events is indicated in the title. The stenosis returned in about six months after she had seemed cured and appeared to be granulomatous in nature, but the microscope showed it to be papillomatous. A tube was then worn for about six months longer, since which time the larynx had been free. The voice, however, was gone. A fair view of the larynx could now be obtained with the short Killian tube, and while there was no evidence of any neoplasm there was very little cord remaining.

Dr. J. SOLIS-COHEN did not think that there was any connection in the case between the fibroma and the papilloma. In these cases he preferred the tracheotomy tube to the intubation tube.

Dr. G. HUDSON MAKUEN thought that much might be done in cases of whispering voice after these operations. It should be encouraged and resonant tones might come later.

Dr. HARRIS replied that the child could whisper in a voice heard at a distance of 2 or 3 ft.

Hysterical Mutism.

A general description of this condition was given by Dr. G. HUDSON MAKUEN, of Philadelphia. He also reported the case of a young man of twenty-two, who was struck across the bridge of the nose and right orbit by a live trolley wire. He was dazed for a few hours, but apparently not severely injured. The power of speech, however, was in complete abeyance. When coming under the author's observation some time later several minor faults of the upper air-passages were removed without any effect on the loss of speech. There was marked anaesthesia in the larynx. The patient could not hold the vocal cords in approximation sufficiently to make them vibrate and produce sound. He could not produce either resonant or whispered sounds, and did not seem to know how to begin to try, lacking the mental conception of articulative movements as well as that of movements for vocalisation. Instruction was carried on for some weeks, with the result of the acquirement of a few short, partly whispered words, but the patient soon forgot what he had apparently acquired. There was a "psychologic lesion" in the centre for motor speech. All sorts of laryngeal stimulation were tried for some time. During the fourth month of his illness he had two typical hysterical seizures, and during the second one, which was very severe and happened at night, his silence of fifteen months was broken, though his first words were uttered in a state of unconsciousness. He was gradually awakened and talked constantly. From that time on progress was satisfactory, though for a considerable period he was troubled with various nervous symptoms.

Dr. J. SOLIS-COHEN referred to cases of hysterical mutism which had come under his observation. Some one had said that there were a lot of spindle-cells in the brain touching each other, and in Dr. Makuen's case it might have been that some of the cell ends were disturbed by the shock of the accident and that under certain unknown conditions another shock might have got them in the proper position again.

Dr. E. FLETCHER INGALS referred to the restoration of voice under certain limitations of a patient whose larynx had been removed, but who could talk very distinctly after filling his chest with air.

Dr. J. PRICE-BROWN referred to a patient with a previous bronchitis in whom the cords now looked normal. In an ordinary register she could not vocalise, though she could do so distinctly in the falsetto voice.

(*To be continued.*)

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Twelfth Annual Meeting, held at Kansas City, Mo., June 11, 12, and 13, 1906.

President: JAMES E. LOGAN, M.D.

PRESIDENT'S ADDRESS.

Dr. JAMES E. LOGAN in his address thought that the prize of \$500 for the article, monograph, or volume which in the judgment of the Council showed most original research was a step in the right direction. He thought, however, that the fund was insufficient for the purpose, and that it should be substantially increased, thereby enlarging the scope of the competition. He pointed with pride to the fact that through the untiring efforts of Drs. Harris and Curtis the nucleus for a great library had been started. He also recommended very strongly that the Society have an organ of its own, a journal devoted exclusively to the special interest which it represents. He also mentioned the rapid strides that had been made in all branches of surgery, especially in otology, and that it had until recently been traditionally associated with ophthalmology; that it was not necessary now for the young man seeking the best training to go abroad to find it, for nowhere on the globe could be found more skilful surgeons, more daring investigators, or more capable, high-minded, and self-sacrificing students of the great problems of biology and pathology than in the ranks of this Society. He expressed his thanks and pleasure for the courteous attention of the members and for their presence.

Endothelioma of the Throat; Tonsillar Disease.

Dr. JAMES A. LOGAN, of Kansas City, Mo., had the patient under observation for about twenty-four days. When first seen

the tonsil was the size of an English walnut and was filled with *débris*. Under X-ray treatment the growth had been reduced in size about one fourth, after about eighteen treatments. The patient had also been given potassium iodide, up to 240 grains a day, but the use of the iodide was discontinued because it did not seem to do any good.

Presentation of Instruments and Apparatus.

Dr. WILLIAM L. BALLENGER, of Chicago, presented his swivel knife and said it was very useful in submucons resection of the septum and in turbinectomies. He applies the knife blade to the anterior attachment of the turbinate body, and carrying the blade back along the attachment as far as is desired, then quickly and easily removes the middle turbinate body. The body falls below the prongs of the instrument. On the inferior turbinate he uses a little wider knife. It is an ideal instrument for turbinectomies and turbinotomies, and it is unnecessary to have a stronger blade than the one used in septal work.

Presentation of Pathologic Exhibit.

Dr. J. A. STUCKY, of Lexington, Ky., presented a growth which gave a history of recurrent abscess of the ear for twenty years, and presented the appearances of an angeio-fibroma. On pathological examination it proved to be an alveolar sarcoma.

A Case of Epileptiform Hysteria, Probable Result of Necrosing Ethmoiditis.

Dr. W. BULETTE, Pueblo, Colo., reported this case of epileptiform hysteria caused, in all probability, by reflex irritation from the necrosing ethmoiditis. The case illustrated the importance of examining the nose and throat in every case of obscure nervous affection, and of being able to recognise a pathologic condition when seen. The so-called abdominal surgeon should not sacrifice a woman's healthy ovaries as a last resort.

Ocular Symptoms of Nasal Origin.

Dr. HILL HASTINGS, of Los Angeles, California, reported five cases, one of them being retro-bulbar neuritis. The ocular conditions most frequently met with that can be traced to nasal trouble

are œdema of the eyelids, congestion of the conjunctiva, ptosis, squint, pain in the eye, disturbances of vision.

Middle-Ear Suppuration as a Cause of Retropharyngeal Abscess.

Dr. EDGAR M. HOLMES, of Boston, regarded retropharyngeal abscess in the adult, from any cause, as rare, and considered that middle-ear disease rarely advanced forwards, but was occasionally the cause of retropharyngeal abscess; when it has occurred, thorough removal of the granular and necrotic material, and a free incision through the pharyngeal wall are indicated. The index finger is placed in the cavity as a guide in using a small aural curette. This proceeding is followed by permanent recovery. The external routes of attack are available, but all of them, with the exception of removing the condyle of the jaw, offer little opportunity to inspect or attack the bone which is diseased.

Infective Sigmoid Sinus Thrombosis; Resection of Internal Jugular; Report of a Case; Recovery.

Dr. H. BERT ELLIS, of Los Angeles, reported a case in which he resected the internal jugular, with the resultant recovery of the patient. He thought the most characteristic symptom of this condition was a sudden rise of temperature followed by a spontaneous and as sudden a drop. Severe chills are frequent; profuse sweating nearly always follows the sudden rise of temperature. Headache, mental dulness, paralysis, or convulsions would lead one to suspect cranial complications; a sinus thrombosis which has existed for some time is likely to extend downwards into the internal jugular; swelling of the lymphatics behind the ramus of the jaw sometimes occurs; the fundus of the eye should always be examined; an unusual and unaccountable depression and weakness is very likely to be found in patients suffering from thrombosis, and its presence may be considered contributory evidence.

The Submucous Resection Operation on the Nasal Septum.

Dr. JOS. C. BECK, of Chicago, gave the following reasons for always choosing this method in preference to all others: The operation can be done in almost every instance under local anæsthesia, with comparatively little pain, shock, or discomfort to the patient; hæmorrhage during and subsequent to the operation is slight; the after-treatment is very simple, it is not annoying to the

patient, and is shortened by many weeks; only one side of the nose is attacked, and the patient breathes freely through the other nostril while the operated side is healing; the results are obtained with the destruction of a very slight area of mucous membrane, and cicatrices and crust-formations are not present in the same degree as in other methods of procedure. His technique is to thoroughly cleanse the vestibule; to douche with a mild alkaline antiseptic solution; to apply cocaine (20 per cent. solution) and adrenalin (1 in 1000) to both sides from five to ten minutes; also to give a subperichondrial injection, by Schleich's method, of eucaine and adrenalin to the most anterior part of the septum. He uses the operative nasal speculum and makes the incision, usually the Killian, of the mucoperichondrium in front of the deviation, dissecting, first by Freer's sharp elevators, afterwards by tape packing; he then makes the incision through the cartilage, separates the mucoperichondrium on the opposite side by packing with strips of tape, takes out the packs and introduces the swivel-knife, removes the cartilage, and, if a ridge is present, removes it by an automatic chisel; the bony septum is removed by bone-forceps; the flaps are re-adapted, and a clamp is introduced to hold the flaps in position; the nose is packed lightly with gauze covered with vaseline.

Submucous Resection of the Nasal Septum.

Dr. CHEVALIER JACKSON, of Pittsburg, said that resection of the hypertrophic turbinal, middle or inferior, of the concavity is an essential preliminary, that where synechiæ exist resection of the outer wall should be done first, allowing an interval for healing. Incisions may be Hajek's or Killian's, but sharp angles require Freer's incisions on the crest, or, if far back, anterior to the crest. Careful elevation of the mucoperichondrium is essential. More perforations occur from failure to elevate from the entire field prior to the attempt to remove cartilage or bone than from any other cause. The cartilage should be cut through with a sharp knife, not scratched through. A complete operation, extending backward and upward into the bone, where this participates in the deformity, is usually necessary.

Results of Operation upon the Nasal Septum by means of Various Incisions.

Dr. J. F. BARNHILL, of Indianapolis, spoke of the various surgical procedures that have been in vogue for septal operations, from the

Blandin's punch to the Bosworth by means of the nasal saw. He believes that the percentage of cases relieved or entirely cured by the use of the nasal saw is as great or greater than has resulted from any operation he has performed. He thinks no recent operation has supplanted the Bosworth. He also uses in selected cases the Gleason, Asch, and Mayer operations. He feels, in conclusion, that a great many of the older operations still have their uses.

The Treatment of Perforations of the Nasal Septum.

Dr. M. A. GOLDSTEIN, of St. Louis, called attention to the fact that so little attention had been directed to the question of perforations of the nasal septum and their most satisfactory treatment. He uses the Ballenger single tine swivel knife, and is enabled to cut away the rim of the cartilage smoothly and equidistant from the mucous edges along the whole circumference of the perforation. He uses a straight, sharp, Freer elevator in elevating the mucous membrane. The results have been uniformly successful.

The Cause of Vocal Nodules.

Dr. FRANK E. MILLER, of New York, thought these nodules could be produced by means of infection of the tonsils and perversion of the action of the thyro-arytenoidens externus muscle. The singer's node was a tumour, but not a neoplasm, a cellular change occurring in the swelling.

The Function of the Accessory Cavities of the Nose.

Dr. J. M. INGERSOLL, of Cleveland, said that the accessory sinuses of the nose in the lower animals are developed in connection with the olfactory portion of the nose. In animals which have an acute sense of smell the olfactory (ethmoidal) turbinals exhibit a tremendously intricate development, and the accessory sinuses are correspondingly more highly developed, and all of them contain olfactory turbinal tissue. Their function is to conduct inspired air more directly over a large surface of the olfactory turbinals, which would not otherwise be exposed to air, except by diffusion, and thus the accessory sinuses increase the acuteness of the sense of smell. In those animals in which the sense of smell is not acute the olfactory turbinals have degenerated and receded

from the accessory cavities. The cavities are left with comparatively smooth walls; their openings into the nasal fossæ contract and their functional activity is lost. In man the accessory cavities are almost completely shut off from the nose, their functional activity ceases, and they remain as rudimentary structures.

The Nasal Turbinate as a Vasomotor Index.

Dr. J. A. BABITT, of Philadelphia, said that the nasal cavity possessed a most highly sensitised vascular erectile organ, readily accessible to examination; this in the early part of life is particularly sensitive to vasomotor influences, and apparently holds a co-ordinated relation to general vitality and offers assistance in the gauging of metabolic change. To substantiate this other vasomotor tests may be applied. A search into the general life and history of the individual indicated by local examinations may reveal much of neurotic influence; the influence of sympathetic changes in abdominal physiology may possibly be found. Again, this may prove the key for the detection of associated sexual excess, or even may reveal the reflex vital disturbance from sexual irritation of deformity. In fact, redirection of the subject's entire life might in remote cases be a providential leading from studies of vasomotor changes. The latent qualities of clear eye ground, soft velvety skin, normally vascular and undisturbed mucous membranes, resilient muscular action, regularity of all secretions and excretions, deep clear respiration, a pulse regular in volume, rhythm and *vis a tergo* pressure, indicative of strong valvular action mean health. Deranged vasomotor responses are imperative, and herein lies the value of vasomotor evidence. Its advisory indications will be both prohibitory and stimulative.

Skiagraphy in the Diagnosis of Frontal Sinusitis.

Dr. W. A. CHISHOLM, of New York, presented sixteen radiographs showing frontal sinusitis.

Three Cases of Laryngeal Neoplasm.

Dr. CHARLES W. RICHARDSON, of Washington, reported one case of neoplasm in the larynx noted from six months to the ninth year of life and now disappearing. The second was a multiple papilloma in an adult, and the third a laryngeal carcinoma, in which he had performed laryngectomy. The patient, who was seventy-two years

old, died of collapse on the morning of the fifth day. In this case the growth seemed to be localised and the outlook seemed very promising, yet the outcome was not favourable. Complete laryngectomy does not offer a very favourable result in the aged. He believes that the operation devised by J. Solis-Cohen is indicated in these cases.

The Results obtained from the Radical Operation for Chronic Purulent Otitis Media.

Dr. S. MACCUEEN SMITH, of Philadelphia, advises cleansing the canal with a 25 per cent. solution of hydrogen peroxide, then normal salt solution, and this followed by a 10 per cent. solution of alcohol, the latter being gradually increased in strength until absolute alcohol is used. This should be done by means of the cotton-wrapped applicator in cases where there is only a scanty discharge. After syringing, the entire ear cavity is carefully and thoroughly dried under good reflected light, then a powder composed of equal parts of aristol and boric acid is liberally insufflated over the entire cavity; the same powder is also placed over the mastoid incision and the dressing applied. This method of treatment should be applied every second day until the discharge has markedly decreased.

Dr. E. B. DENCH, of New York, said that certain questions had arisen regarding the technique of the operation—first, the advisability of primary grafting; second, the advisability of secondary grafting at the end of five to ten days after the primary operation; third, the advisability of the introduction of grafts through the canal; and fourth, anomalous methods of healing after skin-grafting. He thought grafting advisable at all times; convalescence is shortened if it is employed.

Two Cases of Stammering, illustrating the Importance of Early Treatment.

Dr. G. HUDSON MAKEN, of Philadelphia, reported two instances in which phonetics were largely used and dietary restrictions were imposed, and the children carefully watched, resulting eventually in recovery.

Modified Blood-Clot in Mastoid Surgery.

Dr. W. SOHIER BRYANT, of New York, reported four cases in which the clot had given excellent results.

*Report of a Case of Mastoiditis and Temporo-Sphenoidal Abscess ;
Operation ; Recovery.*

Dr. SEYMOUR OPPENHEIMER, of New York, reported a case in a boy, aged seven, who had had purulent discharge from the right ear four years following measles. He complained of slight pains and headache, especially at night. He was operated upon and made an uneventful recovery.

Herpes Zoster Auris.

Dr. DERRICK T. VAIL, of Cincinnati, reported a case in which this rare condition occurred, and in which the very terrific pain which nothing was able to relieve seemed diagnostic. The blebs formed behind the ear in the mastoid region. He came to the conclusion that herpes zoster auris was like true zoster elsewhere, a definite disease usually running an acute course ; that it is very rare, but has been observed by a number of noted authorities ; that it may involve the membrana tympani, as well as deeper parts of the auditory canal ; that it is an acute infectious disease, causing neuritis, the storm-centre being in the ganglion of a sensory nerve ; that lymphadenitis is almost invariably present and probably precedes the attack ; that the treatment is of little avail, the disease usually running a rapid course and healing spontaneously.

Treatment of the Upper Air Passages and the Ear.

Dr. W. C. BANE, of Denver, divided the treatment into constitutional and local. He placed great importance on rich blood as the destroyer of tubercle bacilli, hence the importance of a full nourishing diet. Forced feeding with rest, and guaiacol and creosote and calcium chloride are the best aids. For the local treatment of tuberculous laryngitis a 4 per cent. solution of resorcin is very beneficial. The most efficient remedy at the present time is formalin. Its administration should be preceded by an application of a 5 or 10 per cent. solution of cocaine or β -eucaine. As a local anaesthetic orthoform, inhaled or insufflated, is of value.

*Surgical Treatment of Tuberculosis of the Upper Air-Passages
and the Ear.*

Dr. ROBERT LEVY, of Denver, said that surgical measures are controlled by the character of the lesion, their nature, extent, and

other complications, whether primary or secondary, and by the limitations placed on the possibility of early diagnosis; that all cases of chronic suppuration of the middle ear in tuberculous individuals are not necessarily tuberculous; that the objects of surgical measures in tuberculosis of the ear are the removal of all available foci of disease, the removal of diseased bone, and the establishment of drainage; that tuberculosis of the nose responds readily to surgical treatment, the methods used being curettement and excision by cold wire or galvanic cautery snare; that pharyngeal tuberculosis is a manifestation of the most asthenic form of the disease, presenting all conditions which contra-indicated surgical intervention; that operative intervention in pharyngeal tuberculosis is only palliative; that in laryngeal tuberculosis deep incisions are valuable in œdema and in uniform firm infiltration, their usefulness being increased by rubbing in lactic acid; that excision of tuberculous deposits is limited to those cases in which there is a certainty of completely removing the entire focus of disease; that the extent of the involvement is often greater than can be determined by laryngoscopic or macroscopic examination; that curetting is valuable in ulcerations and soft excrescences, the character of the ulceration, however, modifying its applicability; that repeated and extensive operations can be performed, provided the lesions develop progressively; that the galvanic cautery is useful in small, easily accessible tuberculous ulcerations; that tracheotomy might prove of value in children, and is always indicated for the relief of dyspnoea; and that laryngectomy is probably never indicated.

The Climatic Treatment of Tuberculosis of the Upper Air-Tract.

Dr. WOLFF FREUDENTHAL, of New York, emphasised strongly the necessity of giving tubercular patients the benefit, not only of medicinal and surgical, but also of climatic, treatment; that if, after thorough trial, the patient does not do well in one climate, he should be sent to another. He does not think it wise to become pessimistic after having tried one specific kind of climate or treatment without success; that, whatever the method of treatment, the physician should constantly maintain a spirit of optimism, which would be an inspiration both to himself and to his patient.

Ether Narcosis by Rectum.

Dr. J. A. STUCKY, of Lexington, Ky., reported four cases in

which this method was used. The patient passes under the influence of the drug rapidly and with no sense of suffocation; less ether is used, not only in producing the narcosis, but in maintaining it; the stage of excitement is lessened or absent; the ether recovery is more rapid, and the disagreeable after-effects of ether-inhalation are diminished or absent. The use of this method in diseases of the lungs, especially tuberculosis, abscess, and pneumonia, immediately suggests itself, also in empyema, mediastinal new growths, and for all operations in laryngology and rhinology. The greater part of the ether is eliminated through the lungs, the direct irritation of the concentrated vapour is overcome, and post-operative pneumonia should be lessened. The absence of bronchial secretions and vomiting has been a striking feature.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

*Twenty-seventh Ordinary Meeting, held in the Medical Department of the University
of Leeds on Saturday, June 23, 1906.*

The President, A. E. CUMBERBATCH, F.R.C.S., in the Chair.

The following communications were made :

CASE OF DEFECTIVE HEARING FROM CHILDHOOD; CONSIDERABLE RECOVERY.

By H. SECKER WALKER.

Miss E. W—, aged fourteen. Influenza at seven months of age. Seen by Dr. Barrs at six years of age. The hearing then was defective; she understood what she saw and touched and was quite intelligent and could say a few words indistinctly. She had been brought up and educated as a deaf mute, living for several years with a very excellent teacher of lip-reading. She could follow this lady's utterance and speak fairly clearly, but had much difficulty when nervous or with strangers.

When seen by Mr. Walker on February 27, 1906, both tympanic membranes were dense and white; there was slight but not marked retraction. She could not hear the watch at all and only loud sounds. Some improvement was noted after inflation

with Politzer's bag. She can manage lip-reading very fairly well, and on being asked said the ears felt more open. After using the air-douche a few times the catheter was tried and further improvement obtained.

March 3.—Watch $\frac{1}{2}$ in. right and left (normal 48 in.). Has never heard a watch before except on contact. After catheter $2\frac{1}{2}$ in.; a raised voice at 18 in. March 6: 2 in., catheter 8 in. March 9: 7 in., catheter 15 in. March 12: 20 in., catheter 30 in. March 17: 24 in., right 27 in.; left 21 in. Can speak better and hears many out-door sounds for the first time, and words without watching the speaker's lips. The hearing for a watch remains at about 24 in. right and left, and patient is gradually learning, as a small child, the meaning of the various word-sounds.

PARTIAL NECROSIS OF COCHLEA AND SIGMOID SINUS THROMBOSIS.

By H. SECKER WALKER.

The patient when twelve years old was struck on the head. Next day in the right ear there was pain and discharge, and vomiting, followed shortly by rigors and sweats. A subperiosteal mastoid abscess was present. The strabismus present was concomitant, not paralytic. On opening the superficial abscess a sinus was found passing into the mastoid antrum. This was freely opened, and several sequestra removed from the postero-internal wall. The lateral sinus was exposed and opened for a considerable distance. A quantity of septic and breaking-down clot was removed. The complete mastoid operation was then done. In a week's time there was a return of the vomiting and some drowsiness, slight right optic neuritis, and retraction of head. The lateral sinus was further exposed and washed out, and a post-pharyngeal abscess opened in the neck beneath the deep vessels. After two small sequestra had come away from the middle ear, complete healing followed this operation. The first was, unfortunately, thrown away by the nurse, the second was found to consist of the lower turn of the cochlea.

Lately there had been a return of suppuration in the neighbourhood of the fenestra rotunda, which was rapidly dwindling under treatment. The operations were done six years ago, and the case was recorded at a meeting of the Society in London on June 10, 1901.

The boy can hear (when the left ear is excluded) tuning-fork C. 128 close to the ear, C. 256, C. 512, C. 1028, C. 2048 at six

inches; Galton's whistle; Rinne + right ear; Weber + to right side. The specimen showed part of the cochlea from this patient's right ear.

Dr. URBAN PRITCHARD remarked that the first case was an illustration of what they all had met with, namely, that in examining so-called deaf-mutes one finds a large proportion of them with a certain amount of hearing. In this case the small amount of hearing that remained had been neglected, but by using educational treatment a certain amount was regained. It was very important for a large number of these so-called deaf-mutes, who possess a little sense of sound, to give them this little extra hearing in order to improve their talking, and thus to increase their powers of communicating with the world. The second case was particularly interesting to him, because he once saw a similar specimen exhibited by the late Dr. Cassells, of Glasgow, taken from an ear which still retained some hearing. Dr. Pritchard's sceptical nature at that time made him doubt the accuracy of Dr. Cassells' statement. Now he felt that he was utterly wrong in doubting Dr. Cassells, because he had tested this patient and was quite satisfied that the sense of hearing was present.

Dr. DUNDAS GRANT said, in the case of the young girl who came under the definition of deaf-mute, there was no doubt that Mr. Secker Walker had conferred an enormous boon upon her as far as her safety in life is concerned, though it was very questionable whether she would be able to hear speech. Dr. Grant had seen cases recorded of cures of deaf-mutes by the removal of adenoids or other simple means, but he had not been lucky enough to have any of these cases in his own practice. The case of loss of cochlea was certainly a very interesting one, and there was ample room for discussion upon it. It seemed, however, to be quite unquestionable that the boy heard through that ear. Whether the sound was received by a remnant of cochlea or was conveyed through the nerve of the opposite side was a very difficult question. Weber's test for the exclusion of disease in the labyrinth was certainly unreliable, in suppurative cases at all events.

Mr. MACLEOD YEARSLEY, with regard to the first case, inquired how long the patient had been under Mr. Secker Walker's treatment, and how often she had been catheterised, because he thought in many cases satisfactory results might be obtained by perseverance. He also inquired about the condition of the nose and post-nasal space with a view of arriving at the cause of the deafness

apart from the influenza. With regard to Weber's test, Mr. Yearsley thought it was probably the most unreliable and the most useless test they had except in cases of purely unilateral deafness.

Dr. ADOLF BRONNER was of the opinion that cases were not uncommon in which a child who was apparently a deaf-mute could be made to hear fairly well by having the ears attended to. He generally advised mercurial inunctions and frequent blisters behind the ears, and Politzer's bag, or if possible the Eustachian catheter. He considered that a case should never be given up until rational treatment had been tried for a considerable length of time.

Dr. D. R. PATERSON said there was no doubt there were a great number of these cases about, and that particular case might be cited as an example of what the Society was doing in the matter. Professor Hartmann, of Berlin, had taken this matter up, and from his position on the Berlin School Board he had been able to set apart special schools, where the children who are only partially deaf are taught, and, according to his last report, his experience is that considerable good is being done.

Mr. R. N. HARTLEY said this case was interesting from the educational side, and without in the least detracting from the improvement that Mr. Walker had been able to bring about in the girl's condition, he would remind members of the favourable circumstances which existed with regard to her education. She was a girl of considerable intelligence—more than would ordinarily be found in other defective children of the same age, although, of course, the education of the deaf and partially deaf had been immensely improved nowadays by the operation throughout the country of Mr. Acland's Act for the compulsory education of deaf-mutes. There was in Leeds a school of 125 so-called deaf children. Although some of them possessed very little hearing, the very fact of their being at school, apart from treatment, improved them both in intelligence and in hearing. Those who possessed partial hearing seemed, in a sense, to instruct themselves or become helped in their difficulty by the mere fact of their being better educated and from being constantly in the society of people whom they could follow. It seemed the association of other people and the methods of education now in vogue in such a school would form a line of observation which would throw some light on this particular case. It should be remembered that in the case of this girl of fifteen years of age she was put to reside as an adopted child in the private house of the headmaster of a large deaf-mute

institution, and that every possible care was taken to accustom her to speaking, hearing, and being amongst people, so that she had every chance from that time.

Dr. W. MILLIGAN said the practical rule which he had adopted for some time past was not to label any child as a deaf-mute until that child had had a course of treatment by the local practitioner—*e. g.* inflation with Politzer's bag, etc., for a period of a month. At the end of that time, if there were no change in the condition, one was justified in coming to the conclusion that nothing further could be done. At the same time, in reference to what Mr. Yearsley mentioned, it was of the utmost importance that before any treatment is entered upon a thorough examination of the naso-pharynx should be made. It was important that all patients should be energetically treated, and it was a useful thing to use counter-irritation over the mastoid process. The mere fact that a child acquired even the rudiments of hearing showed that he derived benefit therefrom, and he was undoubtedly more easily taught if he possessed very small hearing than if he has no hearing at all. Before condemning a child as a deaf-mute local treatment should be given for a month, which might or might not be of some advantage.

Mr. A. L. WHITEHEAD remarked in reference to what Dr. Hartley had said that there could be no doubt, as he had seen in Professor Urbantschitsch's Klinik in Vienna for the training of the deaf mutes, that although actual sound perception might be little improved, yet at the same time the sense of intelligent appreciation of sound could be very much educated.

The PRESIDENT agreed with Mr. Walker that the physical improvement to the ear had educated the auditory centre by increasing the intensity of the vibrations which reached it. It was in that way that the child had improved. The President was reminded of a case he saw years ago—a medical man's child—who was not as deaf as the case in question, but was very deaf. He treated him in the ordinary way, but was struck by the father's saying that there were certain sounds the child could never hear. After seeing him for a time he came to the conclusion that a good deal of the deafness was mental. As time went on it proved to be so. He saw him eight or nine years after, and tested by a watch and a tuning-fork found the hearing to be practically the same, but for speech it was nearly normal. The President saw the father two or three years ago, and learnt that the patient, who was then in India, had written about the same time to the effect that certain sounds still bothered him every now and then. A letter or part of

a word would often be missed, but for all intents and purposes he heard quite well. He felt sure that if a certain amount of mechanical hearing could be given to a patient, a great deal might be done to improve imperfect mental hearing.

Mr. WALKER, in reply to Mr. Yearsley, said that in Case 1 the ears had been inflated some fifteen times by himself, and for the previous month by her teacher on alternate days. The nose was healthy and no adenoids were present. He attributed the deafness to the influenzal attack when the patient was seven months old.

CHRONIC MASTOID DISEASE; SUBDURAL ABSCESS.

By H. SECKER WALKER.

A. W—, aged thirteen, was admitted on account of profuse otorrhœa from the left ear, accompanied by continuous temperature of 100° F. to 101° F., no pain, vomiting, or rigors.

Mastoid operation, January, 1903. A large cavity containing a sequestrum was exposed, pus exuded through a small opening in the roof of the antrum. The tegmen antri was removed, and subsequently that of the attic, and a large subdural abscess with thick walls was found and drained. After briskly swabbing the cavity with pure carbolic acid the dura was incised and the temporo-sphenoidal lobe exposed, without result. The bone cavities were then well cleansed out, and at a later date the cavity was lined with a large skin-graft. The abnormal size of the cavity was explained by the large sequestrum removed.

EPITHELIOMA OF THE EXTERNAL AUDITORY MEATUS.

By H. SECKER WALKER.

Mrs. J—, aged fifty-three, for three years had had pain, with occasional attacks of bleeding and discharge of pus from the left ear. When seen on February 28, 1906, the meatus was swollen and inflamed, chiefly on the anterior wall. Much pain and considerable amount of pus was present. A circumscribed external otitis was diagnosed, and a deep incision made into the swelling; no pus was found.

When seen again in a month, the pain was less but the swelling was still present, and there was distinct hardness of the tragus and surrounding tissues. No enlargement of glands was detected.

The whole growth, as far as possible, was excised, and during the healing the patient was submitted to the X rays under the supervision of Mr. Constable Hayes.

Sections under the microscope prepared in the Pathological Laboratory of the Infirmary showed the growth to be an epithelioma.

EPITHELIOMA OF THE PINNA; AMPUTATION.

By H. SECKER WALKER.

When seen on April 2, 1902, F. P—, aged fifty-four, had noticed a small pimple with a black head on the pinna for six years. Recently it had grown larger. The edges of the growth were hard. There was some infiltration in the neck just below the ear. The ear was subsequently removed, including the cartilaginous meatus and the infiltrated portion in the neck.

The pathological curator reported that the growth was a squamous-celled carcinoma with formation of cell-nests.

EXHIBITION OF CASES.

By A. L. WHITEHEAD.

(1) A case of acute cerebral abscess. Chronic bilateral otorrhœa for twelve months. Headache and vomiting twenty-four hours, followed by coma. Acute temporo-sphenoidal abscess, without limiting membrane, opened and drained. Double radical mastoid operation.

(2) A case of cerebral abscess. Left otorrhœa three months. Headache and vomiting fourteen days. Left pupil smaller than right; semi-coma. Large, very foul, temporo-sphenoidal abscess.

(3) A case of cerebellar abscess. Right otorrhœa two years. Headache and drowsiness fourteen days. During performance of radical operation track found leading to cerebellar abscess.

(4) A case of bilateral cerebral abscess. In 1901 had large left temporo-sphenoidal abscess opened for coma, vomiting, etc. In 1903 a similar abscess developed on right side with similar symptoms. On each occasion patient was almost moribund before operation.

(5) A case of sigmoid sinus thrombosis extending down the internal jugular. Rigors, vomiting, and remittent temperature. The internal jugular was excised nearly to the clavicle.

(6) A case of sigmoid sinus thrombosis in which the internal jugular was excised.

(7) A case of sigmoid sinus thrombosis in which a portion only of the internal jugular was excised.

(8) A case of acute double mastoid disease following influenza. The whole of both mastoid processes was completely destroyed.

(9) A case of chronic otorrhœa, with necrosis of the labyrinth. A sequestrum composed of part of the cochlea and the semicircular canals was removed.

(10) A case of chronic otorrhœa, with necrosis of the labyrinth.

(11) A case of chronic otorrhœa, with vomiting, headache, coma, and slow pulse. A radical mastoid operation relieved all symptoms.

Mr. WHITEHEAD said the first case he had already reported to the Society; the second was interesting on account of the left pupil being smaller than the right; the fourth case, unfortunately, could not be present. She married since the second operation, and was now having a third child. The eighth case was the most extensive one of its character he had ever seen, practically no bone being left either above, behind, or below; one side was grafted. The patient hears very much better on the non-grafted side. The eleventh was a rather interesting case because he had suspected the presence of a cerebral abscess; but he did not explore the brain. After the radical operation everything cleared up satisfactorily.

Mr. YEARSLEY asked whether Mr. Whitehead still followed the practice of grafting, whether he had given it up, or whether he did it more often than he used to.

Dr. MILLIGAN asked in regard to Case No. 11 whether Mr. Whitehead considered it to have been a case of serous meningitis. Dr. Milligan believed it to be a condition difficult to diagnose in connection with suppurative disease.

Dr. LOGAN TURNER asked whether in this case the cerebrospinal fluid was examined, and whether it might not have been a case of serous meningitis.

Dr. BRONNER considered that in Case 11 there could not have been any meningitis because the symptoms came on so quickly. Similar symptoms were sometimes seen after chloroform.

Dr. PRITCHARD was greatly interested in these cases of paralysis of the sixth nerve producing squint; the course of the nerve was so short that there was no difficulty in localising the seat of the

mischief, which must be some inch or inch and a half from the original disease in the middle ear. He did not consider that the paralysis was due to pressure of cerebro-spinal fluid but rather to localised meningitis. Whatever might be the cause they were all agreed that recovery nearly always followed the mastoid operation.

Mr. WHITEHEAD, in replying, said with regard to Mr. Yearsley's question that he still grafted all his cases because it economised time in the healing process. He found it of great advantage, particularly in hospital cases. In regard to Case 11 he did not explore the brain on finding no disease in the tegmen. He waited twenty-four hours before proceeding with the operation, and the improvement within the next few hours was so great that he did nothing further. With regard to serous meningitis it was a very convenient term which they used to cover the group of symptoms resembling those occurring in purulent meningitis but terminating in recovery. There was in his record practically no case of death resulting from serous meningitis. He did not know of any case where a satisfactory *post-mortem* examination had been made, showing that death had resulted from it. One could call it serous meningitis, and no one could gainsay whether it were so or not. There must have been some great disturbance in the brain to give rise to those symptoms, and to call it serous meningitis was perhaps a convenient expression for the present for want of a better term. In reply to Dr. Paterson's question, Mr. Whitehead thought it better to cut away freely the posterior meatal wall, and so obtain a funnel-shaped opening through which there was no difficulty in applying the dressing.

PATHOLOGICAL PREPARATIONS OF THE TEMPORAL BONE.

By H. SECKER WALKER.

Mastoid and Vestibular Suppuration.

Left temporal bone of a child the subject of mastoid disease. The patient had the usual complete mastoid operation performed. A small patch of disease remained posteriorly. The child did not return to hospital for a year, and then this was noticed to be still present, and there was some pus lying in the fenestra ovalis. Several attacks of epileptiform convulsions with subsequent rigidity and paralysis. The symptoms suggested tubercular meningitis, but in the presence of the suppuration it was decided to operate further. The present opening into the cerebellar fossa was made

and no pus found. The chisel and small electric burr were used and the horizontal semicircular canal cut away. Anteriorly the burr opened the ampulla and entered the vestibule. The burr then was taken through the fenestra ovalis and fluid syringed through the vestibule. No facial paralysis occurred. The canal of the facial nerve was accidentally opened in preparing the specimen. The child died three days later from tubercular meningitis.

Sigmoid Sinus Thrombosis.

Part of the right side of a skull of a child nine years of age. The bone over the lateral sinus had been removed and the mastoid cells and antrum and middle ear opened. A septic thrombus extended from near the middle line behind to the jugular bulb. The outer wall of the venous sinus was removed after plugging the vein near the torcular; the jugular vein opened in the neck low down, and, after syringing through into the lateral sinus, was ligatured. Scarlet fever four years previously, followed by occasional otorrhœa. Severe headaches, chiefly on the right side, during the month before admission, vomiting for one week, diminishing discharge, with increasing pain in the ear and head, followed by drowsiness. Temperature 102° F., pulse 116, respirations 40. Death from shock. No meningitis or cerebral abscess.

Professor L. MIALl read a paper on *The Organs of Hearing in the Lower Animals*.

SOME POINTS IN THE DIAGNOSIS OF THE COMPLICATIONS OF TEMPORAL BONE DISEASE, BASED UPON A STUDY OF 135 FATAL CASES.

By A. L. WHITEHEAD.

This paper will be found on p. 269 in our June issue.

Dr. A. KNYVETT GORDON inquired, with regard to the cases where meningitis was found, whether it had arisen by direct or by lymphatic extension, also in what percentage, approximately, of the 135 cases was there a history of a previous attack of one of the exanthemata.

Dr. MILLIGAN remarked that in these 135 cases Mr. Whitehead had said twenty-two of them were of tubercular meningitis. That led on to the statement about the advisability of not performing upon those infants any very extensive operation at one particular time. Dr. Milligan reminded members of the Society that that was a point he emphasised some little time ago in connection with

this particular subject, and that he then suggested that these cases should be operated upon in stages. He was pleased to hear that Mr. Whitehead held a similar view. In such cases the children are so asthenic and feeble that they are quite unable to stand any formidable operation at the moment, and the practice which seemed advisable was, in the first instance, to open and drain the infected area, and then later on to perform, if necessary, some more radical operation. It was an important practical point and it was borne out by what Mr. Whitehead had said. He asked Mr. Whitehead in how many cases of cerebellar abscess nystagmus was present.

Mr. WALKER wished to support Mr. Whitehead as to the disadvantage of doing a very thorough operation on the mastoid in tubercular children. In infants the temporal bone is so soft that it can be scraped almost entirely away. It was his practice merely to well drain the abscess cavity, and if necessary to do a more complete operation when the child is older and stronger.

Dr. LOGAN TURNER said he was interested to learn about the various means of diagnosis in regard to some of the intra-cranial complications. There is no doubt cases occasionally occur in which the classical signs and symptoms are absent. Two means which help still further in these difficult cases are the examination of the cerebro-spinal fluid and the examination of the blood. Fresh attempts have been made recently to throw light on difficult cases by these methods, and some interesting papers on this subject have been presented. The leucocyte count is higher in meningitis cases than in cerebral abscess cases. Again, the percentage of polymorpho nuclear leucocytes is raised when meningitis or cerebral abscess is present. That is the result of the blood examination; but when this method is utilised with the examination of the cerebro-spinal fluid, the tension and turbidity of the latter, along with the presence or absence of organisms in the fluid, are of assistance. He thought that as a Society they should make more careful observations on these points, and see whether some assistance could not be derived from the collected material.

Mr. WHITEHEAD, in reply, said with regard to the presence of a distinct path of infection in the cases of meningitis, in quite a large number of his cases there was a definite track, but in many cases there was no obvious connection. He could not give the percentage of the cases arising from exanthemata; he had no actual statistics on that point. With regard to the difficulty he had mentioned in operating upon children he apologised to Dr. Milligan for not attributing to him the origin of that sugges-

tion. By following his plan in two cases he was successful in saving lives that otherwise might have been lost. In reply to Dr. Milligan's question concerning nystagmus it was present in only three out of twenty-one cases of cerebral abscess. With regard to Dr. Logan Turner's question the blood was examined in several cases, but the number was not sufficiently large to be included in the statistics. Several of these cases had lumbar puncture performed upon them, and his experience was not satisfactory. Positive results were only obtained in those cases of advanced meningitis where the symptoms left no possibility of doubt. He had not found it useful in the difficult cases where the diagnosis lay between early meningitis or acute cerebral abscess. Examination of the blood and cerebro-spinal fluid only gave positive information in those cases where the diagnosis was beyond doubt. It is only by considering the probability of symptoms or groups of symptoms occurring in the different classes of cases that reliability can be obtained in methods of diagnosis. During the last few years the study of these tables indicating the relative frequency of symptoms had been of great assistance to him, and he thought they might be helpful to the members of the Society in the future.

SOME FURTHER EXPERIENCES OF THE RADICAL MASTOID OPERATION IN SCARLATINAL OTITIS.

By A. KNYVETT GORDON.

This paper will be found on page 275 in our June issue.

Mr. WALKER said he had only rarely seen cases of mastoid supuration during the scarlatinal attack. Early this year he had to operate on such a case. The patient, a boy, began with scarlet fever on December 27, 1905. Five days later the right ear began to ache, and there was a slight discharge. On January 21 the mastoid became puffy and swollen, and was incised by the patient's own medical man, and pus escaped. At the end of a week there was a fresh collection, and Mr. Walker saw the case in consultation. There was an acute mastoid swelling with a high temperature; pus was found superficially and forcing out under pressure through a small opening in the squamo-mastoid suture. The pus was almost entirely contained in the mastoid cells below the antrum; this was almost empty. The antrum was thoroughly opened, so that the iter could be seen. The middle ear and iter were left untouched except for douching. Dr. Porter had recently written saying that the wound had entirely healed, and the hearing power was perfect.

Dr. BRONNER said that in his experience of scarlatinal cases there is great danger involved if the wound behind the ear is allowed to close too soon. When there is much disease of the bone, he makes a large incision behind the ear and removes the diseased bone, but better hearing is obtained if the attic is not opened. He had a peculiar case of scarlet fever in which there was a great swelling behind the ear, which he opened at once. To his surprise, however, he found that there was scarcely any pus in the mastoid cells. It was a peculiar distension of the whole of the mastoid process.

Mr. WHITEHEAD was also of the opinion that there is much more disease in the mastoid than in the middle ear, and that by leaving the attic and the middle ear alone and clearing out the whole of the mastoid, keeping a large opening from behind, just as good a result is obtained.

Dr. GORDON (in reply) said that where there are obvious local signs of mastoid disease the best operation is that described by Whiting, in which the mastoid side is attacked very freely and the tympanic side left alone. In the cases that he—Dr. Gordon—had described there was tympanic as well as mastoid necrosis. With one exception he had not performed the radical operation in any case in which the otorrhœa had not persisted, in spite of intra-tympanic treatment, for at least a month. The more usual period had been six weeks to two months. In the excepted case the disease had advanced so rapidly that after only six days' otorrhœa he found both the tympanic and mastoid sides practically a mass of pus and osseous *débris*; he therefore performed the radical operation, and the child did well. With regard to the question of keeping the wound behind the ear open, his own practice had been to sew it up with a small drain at the lower angle. In only one case was there any difficulty in obtaining a satisfactory cure, and there he did not make the new meatus sufficiently large. If the wound should heal by first intention a considerable saving of time is effected, and it is quite easy to open it up again if primary union does not occur.

THE MODE OF CONTINUITY OF THE FIBRES OF THE AUDITORY NERVE WITH THE AUDITORY SENSE EPITHELIUM AND WITH THE NUCLEI IN THE HIND-BRAIN.

By J. CAMERON and W. MILLIGAN.

This paper will be found on p. 278 of our June issue.

The PRESIDENT remarked that the valuable paper they had

listened to was a considerable step forward in their knowledge of the anatomy of the internal ear.

Dr. PRITCHARD agreed generally with the observations of the demonstrators. There was one point, however, in which he differed, and that was in regard to the hair-cells; they are of two kinds, and are alternately bristle-shaped and thorn-shaped.

Dr. MILLIGAN said that Dr. Cameron had put their views so well that it was unnecessary for him to add anything to what Dr. Cameron had said. Their investigations had been confined to the lower vertebrates, and they hoped on another occasion to bring forward the result of the investigation of the human auditory nerve. The investigation had proved one important point, namely that there is no synapsis between the nerve and the auditory epithelium.

THE INFLUENCE OF PREGNANCY AND PARTURITION UPON CERTAIN FORMS OF PROGRESSIVE DEAFNESS.

By W. MILLIGAN.

This paper will be found on p. 280 of our June issue.

Mr. YEARSLEY mentioned a case of otosclerosis which he was able to follow some time ago. Like so many early otosclerosis cases, she showed increased bone-conduction. After her first child she was very much more deaf, but the bone-conduction had decreased. She had two other children, and grew progressively deafer after each parturition and lost more bone-conduction. He asked Dr. Milligan whether it was not rather the processes following parturition that had a bad effect upon these cases than pregnancy itself. He thought a great deal might be learnt if a series of blood counts were taken in these cases.

Mr. WHITEHEAD said in his experience deafness had not increased during pregnancy, but rather during the period of feeding the child; it is more due to general debility following upon prolonged breast feeding than to pregnancy or partition.

Dr. BRONNER agreed with Mr. Whitehead that deafness increases after child-birth, and that it is absolutely due to general debility and probably loss of blood. He had a very interesting case of a lady who had chronic aural catarrh, and he told the husband that the deafness would probably increase after child-birth. The lady eventually was taken to see somebody else, who said he could cure the deafness by an operation. The only result of that operation was that there was a great loss of blood and the hearing became

very much worse. Then after a few months she had a child and got worse again. The case was very interesting because it showed that the increase of deafness was due, not to any toxin, but to the great loss of blood both after the operation and after child-birth. In many cases the deafness appears to be worse than it is because of the tinnitus.

Dr. BIRKETT, of Montreal, said that in his experience these cases of incipient deafness were undoubtedly made worse by marriage, and it had always been his practice to speak very frankly to the young persons about to be married as to the probability of the deafness increasing, and then leave them to expect the consequences. These were matters, as they all knew, which could not always be controlled, but one could always advise, and he thought that was the right course to pursue—to place before the patient the situation and inform her of the inevitable result which follows marriage in such a case. As to the cause, it always appeared to him to be largely the debility following parturition. He had found these patients to be benefited very little by local treatment. He thought that attention towards the general health was absolutely essential.

Dr. DUNDAS GRANT said Dr. Milligan had raised an important question from the sociological standpoint. They might feel very strongly on these cases, but before recommending interference with normal gestation it would be necessary for them to make quite sure as to the relation of cause and effect. It would be necessary to differentiate the forms of deafness and not mix up ordinary chronic catarrh with sclerosis of the middle ear, because in such a case the advice would not apply. It should be confined to those in whom the diagnosis of sclerosis is undoubted. In the next case they should make sure that the prognosis is as bad as they have been led to suppose. Sometimes they were pleasantly surprised in those cases when an unfavourable prognosis is not verified by the result. The deafness often begins with child-birth, and gets worse each time, yet it does not always follow that marriage always results in pregnancy. They should therefore not be too urgent in advising women to avoid matrimony, although he agreed that one might let them know the possibility and then leave it to them to judge for themselves.

Dr. PATERSON did not know whether Dr. Milligan desired to distinguish between pregnancy and suckling. Dr. Paterson, in his experience, found that with a family history of deafness there was very often a distinct increase of deafness with each period of

pregnancy. When there is such a family history some warning might be given, but in many other cases he thought there was no serious need for warning.

Dr. MILLIGAN, in reply, said it was a most important question both from its purely scientific and from its social point of view. He would be the last man to counsel a young couple not to have children, but he had felt strongly, in various cases which he had seen in practice, the extremely deleterious effect of child-bearing. He had certain views on the subject, particularly as to during which period the progress of the trouble is worst, and where its exact origin is. He mentioned a case which came under his notice lately. It was that of a young lady from Norwich, whose deafness had much developed since she had had a child. He wrote to her medical adviser, and he warned the husband as to the dangers that might follow a second pregnancy in his wife's case. He received a reply that evidently the patient had not told him she was again pregnant, and asking if, under the circumstances, it would be justifiable to induce premature labour. That was a very difficult question to ask, and an equally difficult question to answer. He wrote back telling him that in the circumstances he could not take the responsibility of advising the induction of premature labour, but that he thought when the second labour was over it would be his duty, as a medical man, to advise her not to have any further pregnancies. The subject is one which raises so many important social points that he thought it would be worthy of a special discussion. It is a subject upon which is wanted a certain amount of unanimity in the profession in order that one may feel confidence in giving advice. If there were a certain amount of unanimity founded on a general discussion it would be helpful.

FIXATION OF THE STAPES.¹

BY RICHARD LAKE, F.R.C.S.

I MUCH appreciate the honour done me by placing me amongst the openers of this discussion. The subject is one of very great interest, and, as is probably already well known to you, there appears to be no doubt that the first to describe the pathological condition in question was our most celebrated aurist, Toynbee. The time at my disposal, however, does not permit of an historical introduction, nor would I weary you with uninteresting details.

¹ Communicated to the Otological Society of the United Kingdom, May 7, 1906.

The method of procedure which seems to me to be the simplest is to glance at the causes which may lead to immobility of the stapes, and to class them broadly under two wide headings, as one has been in the habit of teaching in one's clinic, these two headings being "intrinsic" and "extrinsic." As an ankylosis of a joint may be intrinsic or extrinsic, bony ankylosis or fibrous ankylosis intra- or extra-capsular, so also may we in this instance divide our causes of fixation into spurious or fibrous, and true or osseous, and with few exceptions all cases which come under our notice can be so subdivided.

Before, however, proceeding any farther in this matter, I think it will be well for me to refer to the necessity of our introducing into our nomenclature a title which exists in foreign literature—that is, to describe the depression in which the stapes lies as the vestibule, retaining the word "oval window," or "fenestra ovalis," for that portion occupied by the foot-plate and the annular ligament.

Taking first the extrinsic causes, or, as we may say, those conditions which are perhaps of least pathological importance. Of these the following occur most frequently:

First, stapediale immobility may be due to fixation of the malleus combined with an indrawing of the latter bone. This condition of the malleus, however, is by no means always accompanied by interference with the free mobility of the stapes. In fact, one must presuppose a particular sequence of events or coincidences of inflammatory trouble in which the condition which causes the indrawing of the malleus is accompanied by some process which interferes with the mobility of the stapes, more especially in the vestibule. This may be due to inflammatory thickening of pre-existing trabeculae or bands or to the formation of adventitious bands by an inflammatory process. More rarely a bony process is found connecting the stapes by one of its crura with the side of the vestibule, which must have had its origin in a more acute inflammation, chiefly perhaps localised in the vestibule. Then one notes those conditions which may be accompanied by fixation of the malleus, but which also may be unaccompanied by it. The first of these is that calcareous degeneration which may occur in the annular ligament. The next is rigidity of the stapes, due to a sclerosis of the mucous membrane of the tympanum, either (a) as a part of a general sclerosis of the air-passages (accompanied, in the nose especially, by dry and frequently by atrophic rhinitis); (b) as a result of frequent catarrhal inflammations; (c) as a result

of inflammatory changes in the vestibule, unaccompanied by fixation of the malleus.

True osseous fixation is relatively rare, and it probably only occurs under two conditions, namely, (1) rarefying osteitis of the labyrinthine capsule, and (2) as the result of chronic suppuration in the middle ear. (With this we have in this discussion but little to do.)

With the former, however, we have much to do, but as the pathology of this disease will be considered especially by my colleague, Dr. Gray, I shall content myself with saying that what happens in this instance is that the bony foot-plate of the stapes becomes united to the labyrinthine capsule, the annular ligament being absorbed and replaced almost entirely by bone.

If fixation of the stapes occurs as a direct result of fixation of the malleus, but with little or no concomitant intra-vestibular thickening, then a condition presents itself which is well exemplified by the following cases:

CASE 1.

Acoumeter, 2'.
Voice, over 15'.
Whisper, 3'.
Rinne C., pos.
Rinne C.²
C. mastoid - 12".

CASE 2.

Weber, pos.
Acoumeter, 6'.
Whisper, 18".
Rinne C. } neg.
Rinne C.² }
C. mastoid - 3".

Air conduction, 1C 64 to C⁵.

In Case 1 my opinion is that the fixation of the malleus was alone directly responsible for the affection—that is to say, the deafness—and that it was secondarily influenced by a pathological condition of the stapedius muscle, probably a tonic contraction, which was relieved by the administration of strychnine, together with the oto-massage;¹ whereas, on the contrary, in Case 2 the condition was complicated either by a fixation of the stapes, due to bands of slight thickening of the mucous membrane, or interference with the capsule of the inco-stapedial joint, and it was only after forced movement of the larger bone that improvement was obtained. This I believe to be an important point.

In cases where a sclerotic process has occurred one finds pronounced the following points on examination when stapedial immobility is present: Paracusis Willisii (not constant); Gellé,

¹ Here I would point out the temporary or extrinsic cause is shown by the positive Rinne.

negative; Rinne, doubly negative; C. on the mastoid, or bone conduction, usually —, rarely normal; Galton's whistle, usually a slight loss in upper-tone limit.

When the hearing power is tested by a series of tuning-forks it shows a slight loss of the low notes and a diminished appreciation of the high tones.

In these cases I have personally found that the greatest benefit is derived from treatment directed to the ear itself, exclusive of internal medication, such as injecting through the Eustachian tube a few minims of the following: Red iodide of mercury gr. iv, lanoline $5i\frac{3}{4}$, paroline to $5i$. When the mixture is made a little heat may be employed. After the injection the patient should be treated by oto-massage. Strangely enough, those cases in which paracusis Willisii is present have appeared to me to give the better results.

We come now to that most serious condition fixation of the stapes due to otosclerosis, or, to be correct, rarefying osteitis of the labyrinthine capsule. We must preface our remarks on this condition by the statement that fixation of the stapes is not an invariable feature in this complaint. That it is a usual one is equally true. Our principal characteristic signs in this disease are a double negative Rinne, paracusis Willisii, and loss of the lower tones, with usually a prolonged bone-conduction when the nerve is intact or hyperæsthetic, and with a loss of bone-conduction when there is accompanying internal ear disease. Gellé's test will be negative when the stapes is fixed. Briefly to review a few tests:

With fixation of the stapes due to malleal immobility alone the loss of bone-conduction will be very slight, I think one might say never exceeding seven seconds, and this will be associated with no loss of the upper notes in the Galton whistle.

When the post-catarrhal sclerotic process has developed bone-conduction will be reduced, but if unaccompanied by nerve disease the reduction will probably not exceed twelve seconds.

I must admit that these figures are open to objection, but they are the result of a careful consideration of my cases in which I believe these conditions to have been present.

We see that with paracusis Willisii and a double negative Rinne, with a loss of the low tones, Gellé's test must be negative, that with regard to bone-conduction, this may be prolonged or diminished according to the state of the nerve.

That, for purposes of diagnosis, the presence of fixation of the stapes may be accurately determined by an incision exposing the

part is no doubt a truism, but, with one exception only, I have never made this experimental incision, safe though it is.

The stapes was absolutely immovably fixed, and the operation was done at the express desire of the patient, who was a Roman Catholic priest, in order that it might be of some assistance to others. He had already been subjected to every form of treatment known to me, including the injection of the liquid ointment I have referred to. In another instance I operated on, a case for vertigo, the stapes was fixed also by bone. In neither case was the mucosa red!

In conclusion, as to prognosis: In fixation, through immobility of the malleus: good. Through the formation of cicatricial tissue: fair. By bone ankylosis: bad.

AUSTRIAN OTOLOGICAL SOCIETY.

Meeting held December 18, 1905.

Chairman: PROFESSOR V. URBANTSCHITSCH.

DR. BARANY gave a lecture upon the *Theory of the Function of the Semicircular Canals*.

In the latest text-book of physiology Nagel makes the statement that the theory of Machs and Breuers concerning the function of the semicircular canals, which is, that they are a sense organ for the perception of movement in different planes, is firmly established and almost universally recognised. Dr. Barany had made a series of experiments which threw some light upon the subject. Doubt concerning the correctness of these opinions arose.

If one rotates to the right in the vertical axis of the body about ten times, there commences on stopping a horizontal nystagmus towards the left. The movement of the eyeball towards the left is strong, the return to the right being much weaker. If the eyes are closed and the eyeball moved repeatedly to the left, a sensation of rotation to the left side is evolved; if the eyeball is now moved to the right the sense of rotation will cease.

Disturbance of the centre of gravity, as well as nystagmus, will appear only if the experimenter stands in a plane which forms an angle with the horizontal. In this case, if the eyes are open a slight stupor supervenes simultaneously with the nystagmus, so

that the observer is unable to see anything clearly. If the eyes are closed the nystagmus is severe and the disturbance of the centre of gravity marked. If in the above circumstances the eyes are voluntarily moved in the direction of the strongest movement of the nystagmus so that this is strengthened the disturbance of the sense of equilibrium is increased; by movement of the eyes in the opposite direction this disturbance is diminished. These experiments appear to show that stimulation of the vestibular apparatus does not directly affect the consciousness by causing the sensation of rotation, but that a reflex nystagmus is started by the vestibular nerves, and that this gives rise to the rotatory sensations.

Proof for or against these theories can only be obtained from a case with complete bilateral ophthalmoplegia and nuclear paralysis of all the eye muscles, together with an intact vestibule. In such a case, if there were sense of rotation, or disturbance of the sense of equilibrium, there would be proof that the vestibule alone could cause the symptoms.

The relation of nystagmus caused by labyrinthine disease to that caused by optical experiments is very interesting. Optical nystagmus is easily produced. A white roller is covered with black stripes at short distances from each other; the patient glances along the roller in a direction parallel to its axis; the roller is then rotated as the hands of a clock, seen from the patient; this causes a horizontal nystagmus to the right. Further, if there is a labyrinthine nystagmus to the left, this can be corrected by causing the patient to look at the rotating roller in the manner described; the nystagmus is, however, in no way influenced after ceasing the experiment.

Professor A. KREIDL remarked that it was assumed that the movements of the endolymph gave rise to the ocular movements. These were, therefore, in the relationship of cause and effect. The disturbance of the endolymph was, therefore, the ultimate cause of the sensation of rotation. *Knowles Renshaw.*

Abstracts.

NOSE AND ACCESSORY SINUSES.

Green, D. C. (Boston).—*Subcutaneous Correction of a Roman Nose.*
"Boston Med. and Surg. Journ.," June 28, 1906.

Patient, a girl with a marked Roman nose as the result of periostitis following injury. An incision was made within the nose through the

mucous membrane over the lower edge of the left nasal bone. The bone was freed from the skin above and the mucous membrane below, and made to present, as the septal cartilage is made to present, in a sub-mucous resection. Both bones were thus treated. When all was free, a median strip, including the deformity and a piece of the septum, was removed, leaving a gap. Then each nasal bone was chiselled free along its outer border and the bones made to meet in the median line without deformity. The result was excellent, the patient now having a straight profile.

Macleod Yearsley.

King, Gordon.—*Some Reflex Neuroses of Nasal Origin.* "New Orleans Medical and Surgical Journal," March, 1906.

Deals chiefly with "sniffles," hiccough, laryngismus, spasmodic croup, asthma, parosmia, chorea, nocturnal enuresis, heterophoria, glaucoma, epiphora, cardiac irregularities, dysmenorrhœa, and stammering.

Macleod Yearsley.

Mosher, H. P. (Boston).—*Inflammation of the Frontal Sinus.* "Boston Med. and Surg. Journ.," June 7, 1906.

Taking as his text the frequency of headache as a symptom of frontal sinus disease, the author proceeds to discuss the development and anatomy of the sinus, the surgical routes thereto, and the diagnosis and treatment of acute and chronic inflammation occurring therein. The value of X rays in giving information as to the size, diverticula, and occurrence of septa in the sinus is specially insisted upon. Mosher divides cases of chronic frontal sinus suppuration into two groups—(1) those in which the chief features are the eye-symptoms; (2) those in which the prominent features are pain and nasal discharge.

Macleod Yearsley.

EAR.

Hopkins, F. T. (New York).—*Electrolysis in the Treatment of Chronic Eustachian Stenosis.* "Arch. of Otol.," vol. xxxiv, No. 6.

The writer thinks this method has fallen into discredit through those who have tried it falling into errors such as insufficient attention to the naso-pharynx current. The smallest bougie No. 1 (French) measures one third of a millimeter in circumference, and the author advises dilatation up to No. 3 or even No. 4. The bougie is used at intervals of from two to four weeks. After three months or more the next larger bougie is employed. He approves of inflation before the passage of the bougie, but deprecates it after for fear of emphysema. He has found cases in which the tinnitus and dulness of hearing diminished after the larger bougies were passed, when no improvement had followed the use of the No. 1 bougie.

In the discussion on this paper in the Otological Section of the New York Academy of Medicine, Dr. Kenefick expressed an inclination to restrict its application to cases of long standing, where the stricture was of a more dry and less vascular character, and in a general way he considered that long-standing closure of the tube, tinnitus, a medium degree of deafness, and extreme vertigo were favourable cases for the electric bougie in proper hands. Dr. Gruening considered that emphysema following inflation with the bougie indicated that a false passage had

been made. Dr. Phillips never used the electric bougie unless he had absolutely failed to enter the tympanum with the whalebone one, and when he failed with this he usually failed also with the electric. In his experience the results had been equally satisfactory with the whalebone bougie so used. He referred to the not unknown danger of the gold bougie breaking during its use. Dr. Simpson felt that when there was a definite organised stricture this was the best, if not the only, method of relieving it; but it was surprising how many strictures could be overcome by simply lubricating the tube by the injection of a little bland oil like benzoinol, through the catheter and then passing the bougie, thus obviating the need of electrolysis. Dr. Harris considered the electrolytic bougie of value in certain carefully selected cases and in competent hands. Dr. McKernon did not profess to have a series of cases of complete cures, but he had had a series of selected cases where relief had followed the use of this method after other methods had failed. Dr. McAuliffe, seeing that the bougie could fit only the smallest part of the tube, questioned how it could engage or enlarge the stricture in the wider parts; he had tried the effect of the electrolytic needle on trachoma and had passed the needle time after time without any effect. He thought the true explanation was found in the action of the galvanic current of the muscles.

Dundas Grant.

Shambaugh, George E. (Chicago).—*Some Relations of the Blood-Supply of the Inner Ear which have a Practical Bearing on the Clinical Study of Otology.* "Archives of Otology," vol. xxxv, No. 1.

The writer draws attention to the divisions of the internal auditory artery, which go respectively to the utricle with the superior and external canals, to the posterior canal, to the saccule, and to the cochlea. The cochlear division branches in a fanlike form with festooned junctions between the radii. In the terminal coil of the cochlea there is a terminal artery. The possibility of the vestibular apparatus being damaged apart from the cochlea and *vice versa* is therefore evident, but not likely to occur in the case of hæmorrhage. The main exit for the blood is through the vein of the aqueductus cochleæ. Shambaugh's observations confirm those of Alexander and Politzer, that there are communications between the blood-vessels of the middle and internal ear, hence the tinnitus in otosclerosis of the middle ear and the tendency to involvement of the labyrinth in catarrhal as well as in suppurative processes of the tympanum.

Dundas Grant.

Wittmaack (Greifswald).—*On Experimental Degenerative Neuritis of the Auditory Nerves.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

The author describes the effect of toxic doses of salicylic acid, which he finds to be similar to those of quinine. He is, however, firm in his conviction that the hæmorrhages and congestions found in such experiments as Kirchner's were due to the death-struggles of the animal, whereas, when the animal is killed by instant decapitation nothing of the kind is present, and the changes are to be found in the nerve-cells as indicated mainly by alterations in the shape of the cells, changes or disappearance of the Nissl bodies, the occurrence of vacuolation, and, in the severest cases, also pronounced disorganisation of the nucleus and the nuclear framework. [The question of congestion or anæmia remains unsettled so far as these experiments go, and has to be solved by investigation in other directions.—D. G.]

Dundas Grant.

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OBSERVATIONS ON THE LABYRINTH OF CERTAIN ANIMALS.¹

BY ALBERT A. GRAY, M.D., F.R.S.E.,

Aural Surgeon to the Victoria Infirmary, Glasgow.

THE method of preparing the membranous labyrinth devised by the writer² has made the study of that organ more easy. The difficulty which previously attended the examination of the inner ear was so great that even the extraordinary patience of Retzius only permitted him to complete the investigation of five mammals and eleven birds. In more recent times Alexander has examined several more by the microscope, but the total number altogether is still very small.

The writer has already published the results of his investigations in the seal and in man. The results of the examination of fourteen other mammals are at present in course of publication and will not be described in this paper, except in so far as they throw light upon the subjects immediately under discussion. It is necessary, however, to refer in general terms to the anatomy of the inner ear in the case of the animals mentioned, in order that that of those described in this paper may be properly understood.

From an examination of sixteen mammals the writer has found that the different orders and species present differences in the anatomy of the inner ear of three main types. These are—(1) differences in the shape of the cochlea; (2) differences in the size

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of the perilymphatic space of the semicircular canals; (3) differences in the size of the otoliths.

The cochlea appears in the mammals under two types, in addition to the peculiar type of the organ as found in the monotremes. These types are the sharp-pointed cochlea which is found in the carnivora and the rodents, and the flattened cochlea which is found in man, the monkeys, the lemurs, the ungulates, and the cetacea. In the case of the carnivora one exception was found to this rule, the exception being the seal. This animal possesses a cochlea which is rather bowl-shaped than pointed, like those of the cat, dog, and puma. There were no exceptions in the case of the ungulates, the least flattened cochlea being possessed by the pig, but the difference between it and the same organ in the other ungulates was found to be slight. There were no exceptions to the rule in the rodents, the rat, the mouse, the guinea-pig, and the rabbit, all being possessed of sharp-pointed cochleæ. Three monkeys were examined and no exception was found, the cochlea being in every case of the flattened type and very like that of man, but smaller. The organ in the lemur was also of the flattened type, as was also that of the porpoise.

The perilymphatic space of the semicircular canals proved to be a very interesting study. Our ideas of the anatomy of the labyrinth have depended so much upon the investigation of the organ in the human subject that it is not surprising that errors have crept in by assuming that certain features found in him will also be found in the lower animals. The present is a case in point. The perilymphatic space in the canals of the human subject is large and well developed, and it has been assumed that this would be true of other animals. But such is not the case. It so happens that man is one of the exceptions to a general rule. In mammals the rule is that the perilymphatic space is either very small or even completely absent in the canals. The exceptions to this rule are—man, the monkeys, and the seal. No doubt there are other exceptions; indeed, another falls to be recorded in this paper, but a sufficient number of examples have been examined to assert that the rule above given is a fairly general one.

In spite of the existence of this general rule, however, it is probable that the original type of the mammalian labyrinth possessed a well-developed perilymphatic space in the canals. The chief reason for this belief is that in the reptiles and birds this is the type invariably found in all the animals of those divisions which have been examined. A more definite statement will be

possible when the labyrinth of the monotremes has been investigated in regard to this feature. One of these is at present in course of preparation, and the results of the examination will be published later. At present we may regard the presence of a well-developed perilymphatic in the canals as indicating a labyrinth of a more ancient type. This, of course, does not mean that the particular species which possesses such a labyrinth is therefore an ancient species. Obviously man is a very recent species of animal, although he possesses the space referred to above. It merely means that man's progenitors have not dispensed with the space when other species of mammals were in process of losing it.

The presence or absence of this space is therefore a valuable guide to the relationship of different orders and species of mammals. Its value is enhanced by the fact that the space does not appear to have any physiological function. It is found in animals which have great delicacy of movement and in animals which have not, as is evidenced by the monkeys on the one hand and by the sloth on the other. It is found in animals which migrate, such as the seal, and is absent in others which also migrate, such as the porpoise. In so far as the function of equilibration is concerned, the space appears to be of no value, for it is found in the climbing monkey and is absent in the lemurs, which also are nearly all arboreal. In short, the space may apparently be retained or dispensed with according to the necessities of the case. What these necessities are we do not yet know, but it is very probable that if more room is required for the surrounding structures, the perilymphatic space of the canals will disappear.

The otoliths of mammals have hardly in previous times been examined carefully, it being assumed that they are small, a natural assumption from the fact that in the human subject they are of very trivial dimensions. This assumption is in the main correct, but the writer has already discovered two exceptions, the porpoise and the seal, and another falls to be recorded in this paper the kangaroo.

The labyrinths which are described in this paper are: the lion, the Indian gazelle, the three-toed sloth, and the kangaroo among mammals; the crested screamer and the ostrich among birds.

THE LABYRINTH OF THE LION (*FELIS LEO*).

The membranous labyrinth of the lion differs in hardly any respect from that of other felidæ except in the matter of size.

The cochlea is of the sharp-pointed type and measures 9 mm. in diameter in the lowest whorl. The second whorl measures 6 mm. in diameter. The scala tympani shows a marked bulging at its lower extremity just before it reaches the round window. This is a common feature in the carnivora and in some of the other mammals. The slant height of the cochlea from the upper margin of the round window to the apex of the organ is 4.5 mm: There are three turns in the spiral of the cochlea, this being a fraction of a turn more than that of the puma and a quarter of a turn less than that of the dog. The cat like the lion, has three turns in its cochlea.

The vestibule measures 5 mm. in its longest diameter, and there are no otoliths in the cavity of a size sufficient to be recognised by the naked eye. The oval window is elliptical in shape, being in this respect like those of the other carnivora, except the seal, in which the aperture is semicircular (if the contradiction in terms may be excused).

The semicircular canals are very regular in shape, rounded and without any noticeable irregularities such as are found in some mammals. Each canal lies in one plane, there being no lateral deviations. The superior is the largest of the canals. It measures 6.5 mm. from limb to limb internally and 7.5 mm. externally. The height of the vertex of the canal from the vestibule is 6 mm. and the diameter of the canal itself at the vertex is 0.75 mm.

The posterior canal lies in a plane almost at right angles to that of the superior canal. It is somewhat smaller than the latter. Its diameter, measured internally, is 5.5 mm. in length and measured externally, is rather less than 7.5 mm. The height of the vertex of the canal above the vestibule is 5.5 mm. and the diameter of the canal itself at the vertex is 0.5 mm.

Unfortunately, the horizontal canal was broken in the process of preparation but it was noticed that it was distinctly smaller than either of the other two. The plane of this canal is relatively low and at its posterior extremity it appears to open into the ampulla of the posterior canal. This low level of the plane of the horizontal canal is very common among mammals and in none of the mammals examined by the writer is the plane of the canal so high relative to the posterior canal as in the monkeys and man. In the two latter the space enclosed by the curve of the posterior canal is almost bisected by the plane of the horizontal canal.

The perilymphatic space is almost entirely absent from the canals of the lion: indeed, it can only be seen in the angles formed

by the ampullæ of the canals with the canals themselves. This feature is common to the carnivora that have been examined, with the single exception of the seal. In the latter the space is well marked.

The length of the whole labyrinth of the lion is 17 mm. The cochlear portion is large relative to that portion formed by the vestibule and canals. In this respect the lion resembles the cat and other carnivora. A condition exactly the reverse of this is found in the lemur.

The angles which the planes of the canals form with one another are rather large in the lion. That is to say, the canals diverge widely from one another, much more so than in man. This divergence of the canals is greater in the lemur than in any animal which I have yet examined.

THE LABYRINTH OF THE INDIAN GAZELLE (*GAZELLA BENNETTI*).

The membranous labyrinth of the Indian gazelle resembles that of the other ungulates in its general outline. There are, however, some unexpected differences.

The organ measures 14 mm. in extreme length from the outermost point on the vertex of the posterior canal to the innermost point on the lowest whorl of the cochlea. The diameter of the lowest whorl of the cochlea is 7 mm., while that of the second whorl is 3.5 mm. The diameter of the tube of the cochlea immediately in front of the round window is also 3.5 mm., the scala tympani showing a marked bulging downwards similar to that found in other ungulates and in most of the mammals. The slant height of the cochlea, measured from the upper margin of the round window to the apex of the organ, is 5.75 mm. The aqueduct of the cochlea is quite unlike that of any of the mammals which I have hitherto examined. Instead of being comparatively straight, as in its near ally the antelope, it is sharply curved. A large vein accompanies the aqueduct out of the cochlea. This disposition of the veins of the organ is different from that of the arteries, which are supplied by the internal auditory artery which enters the labyrinth by way of the internal auditory meatus.

The shape of the cochlea differs in no way from the general type of the ungulates; that is to say, it is of the flattened type. It consists of two and a half turns.

The vestibule of the Indian gazelle is also like that of the other

ungulates. It measures 3.75 mm. in its longest diameter, and does not contain any otoliths of a size sufficient to be recognised by the naked eye. The oval window measures 2.75 mm. in its longest axis.

The semicircular canals of the Indian gazelle differ from those of the other ungulates in one important respect. The perilymphatic space is much more marked than in either the antelope, the sheep, or the pig. In the last-mentioned this space does exist throughout the whole length of the canals, but is so small that at parts it can hardly be seen; in the sheep and antelope it cannot be seen at all in a large portion of the length of the canals. In the gazelle, however, the space can be traced easily round the whole course of all the canals. It is not so large as in man, the monkeys, the seal, and the sloth. In their general appearance the canals show much the same features as those of the other ungulates, apart from the fact of the large perilymphatic space. They are regularly curved in outline, the pig being the one exception to this rule in the ungulates.

The diameter of the superior canal, measured internally, is 4.75 mm., while externally the diameter is 6 mm. The height of the vertex of the canal above the vestibule is 6 mm., and the diameter of the canal itself at the vertex is 1 mm. The posterior canal measures 4 mm. in its internal and rather more than 6 mm. in its external diameter. The height of the vertex of the posterior canal above the vestibule is 5 mm., and the diameter of the canal itself at the vertex is 1 mm. The external canal measures 3.5 mm. in its internal and 5 mm. in its external diameter. The height of the vertex of the canal above the vestibule is 3.5 mm., and the diameter of the canal itself at the vertex is 1.25 mm.

The canals of the Indian gazelle do not diverge from one another at quite such large angles as those of the antelope and the sheep. In this respect they resemble the canals of the pig, though the divergence is still less in the last-mentioned animal.

THE LABYRINTH OF THE THREE-TOED SLOTH (*BRADYPUS TRIDACTYLUS*).

Hitherto the writer has only had the fortune to obtain one example of the edentata, that being the three-toed sloth. To judge from this example the labyrinth of these peculiar animals will be interesting and instructive to study.

The cochlea is intermediate in shape between the flattened and the sharp-pointed type but inclining rather to the former. In this

respect the organ differs from the great majority of mammals, since, as has been already pointed out, there is only one other animal among all those which have been examined which does not fall clearly into one of the two types, that animal being the seal.

The labyrinth measures 10 mm. in extreme length from the outermost point on the posterior canal to the innermost point on the lowest whorl of the cochlea.

The lowest whorl of the cochlea is 5.5 mm., and the second 3.75 mm. in diameter. The diameter of the tube of the cochlea in front of the round window is 2 mm., and there is no marked bulging of the floor of the scala tympani in this region. In the latter respect the labyrinth resembles that of man and the monkeys; but the aqueduct of the cochlea of the sloth is much thicker than in these two orders. There are two and a half turns in the cochlea and the slant height of the organ, measured from the upper margin of the round window to the apex, is 3.75 mm.

The longest axis of the oval window is rather less than 1.5 mm. in length, and the longest diameter of the vestibule is 3 mm. There are no otoliths of a size sufficient to be recognised by the naked eye.

The canals of the sloth are quite unlike those of any mammal which the writer has had the opportunity of examining. They are not semicircular in shape, the horizontal canal being the only one that approaches this form, and even it is irregular. The posterior and the superior canals are quadrilateral or roughly so. The common limb of these two canals arises from each respectively at right angles because there is none of that curving downwards to meet each other as they approach such as is found in all other mammals which have been examined. Similarly, the canals as they approach their ampullary extremities do not curve towards the vestibule, but turn suddenly downwards at right angles a short distance before they dilate into the ampullæ.

The sloth, in common with man, the monkeys and the seal, has a well-developed perilymphatic space in all the semicircular canals. According to the view expressed by the writer this indicates a relatively ancient type of labyrinth.

The internal diameter of the superior canal measures 3 mm. and the external diameter 4.5 mm. The height of the vertex of the canal above the vestibule is 2.25 mm. and the diameter of the canal itself at the vertex is 1 mm. The internal diameter of the posterior canal is 2.5 mm. and the external diameter is 4.5 mm. The height of the vertex of the canal from the vestibule is 2.5 mm.

and the diameter of the canal itself at the vertex itself is 1 mm. The external canal is much the smallest of the three, measuring only 1.5 mm. in diameter internally and 3.5 mm. externally. The height of the vertex of this canal above the vestibule is only 1.5 mm., and the diameter of the canal itself at the vertex is 1 mm.

The angles at which the canals diverge from one another are smaller than in any of the mammals which have been examined, and this gives the canals the appearance of having been pressed somewhat together. In addition to this it will be seen, on comparing the measurements, that the vestibule and canals occupy a smaller proportion of the whole labyrinth than in most mammals. It is exactly the reverse, for example, of the condition found in the lemur, where the canals are very long and slender. It may be that this small size of the canals, associated with their irregular shape, may be in some way related to their clumsy and slow movements. The life which they lead with the body inverted, as it almost continually is, may also be connected in some way with the curious development of these organs.

THE LABYRINTH OF THE BRUSH-TAILED WALLABY (*PETROGALE PENICILLATA*).

The labyrinth of the marsupials is not so divergent in structure from that of the general type of mammalian labyrinth as might be expected in an order of animals so far removed from most of the present divisions. It is, for example, less peculiar than that of the sloth, and far less peculiar than that of the monotremata, the cetacea, or the seal.

The whole labyrinth measures 8 mm. in length from the outermost point on the vertex of the posterior canal to the innermost point on the lowest whorl of the cochlea.

The diameter of the lowest whorl of the cochlea is rather less than 4.5 mm. in length, while that of the second whorl is only 2.5 mm. in length. There is a marked bulging of the floor of the scala tympani in the region of the round window, and the tube of the cochlea at this point measures 2.5 mm. in diameter. There are a little more than two and a half turns in the cochlea, and the slant height of the organ from the apex to the upper margin of the round window is 3.75 mm. The general shape of the cochlea is like that of the ungulates, and more particularly like that of the

pig. The aqueduct of the cochlea is a short tube of about 1.5 mm. in length, this being perhaps the most peculiar feature of the organ in this animal. The aqueduct is thick in proportion to its length and is straight. It is not triangular as in most of the mammalia, but is flattened from above downwards.

In proportion to the rest of the labyrinth the vestibule is rather large, measuring 4.0 mm. in its longest diameter. The longest axis of the oval window is 2.0 mm. in length. There are two otoliths of considerable size in the vestibule. They are larger than those found in any other mammal, with the single exception of the seal, even the porpoise not being an exception in this respect. Both otoliths lie on the inner wall of the cavity, one anteriorly immediately behind the ampullæ of the superior and external canals, while the second lies a little below the first. They are both flat and are of irregular outline.

The semicircular canals are very like those of other mammals and are beautifully regular in outline, reminding one of the same structures in the antelope, though of course much smaller. The superior canal measures 3.5 mm. in its internal and 5 mm. in its external diameter. The height of the vertex of the canal above the vestibule is 3 mm., and the diameter of the canal itself at the vertex is 0.5 mm. The internal diameter of the posterior canal is 3 mm., and the external diameter of the same canal is 4.5 mm. The height of the vertex of the canal above the vestibule is 3 mm., and the diameter of the canal itself at the vertex is 0.5 mm. Thus the posterior canal is smaller than the superior. The smallest of the three canals is the external, which measures 3 mm. in its internal and 4 mm. in its external diameter. The height of the vertex of the canal above the vestibule is 2.75 mm., and the diameter of the canal itself at the vertex is 0.5 mm.

There is a very small perilymphatic space in the canals; it is more noticeable in the angles formed by the ampullæ with the canals themselves. In this respect, therefore, the labyrinth is like that of the ungulates with the exception of the gazelle.

The labyrinth of the kangaroo is not of such an ancient type as we might have expected, save in one respect—the presence of large otoliths. It is unfortunate that the writer has been able to obtain only one example of the marsupials, and it may be that in other species of this order a more ancient type of labyrinth may yet be found. In this connection it should be pointed out that the diprotodontia class of marsupials is generally considered to be of more recent origin, and this, if true, may account for the

fact that the labyrinth of the kangaroo is not of such an ancient type as we might have expected.

THE LABYRINTH OF BIRDS.

It is quite outside the scope of this paper to describe in detail the typical labyrinth of birds. That work has already been done by several writers, and in particular by Retzius, to whose writings the reader is referred. The present purpose is to show the likenesses and differences which exist between the various species. The reader need only be reminded that there are, as in almost all vertebrates, three canals which occupy nearly the same position relative to one another as they do in the mammals. On the whole, perhaps, they vary more in their disposition than do those of the mammals. One feature seems to be peculiar to the labyrinth of the bird: the horizontal canal, instead of terminating almost in the plane of the posterior canal, passes underneath the latter and projects backwards behind the plane in which it lies. The result of this arrangement is that the two canals form a cross of which the limbs are almost at right angles to one another. At the point of crossing there is a channel of communication between the two canals and it has been supposed that this is a constant feature of the labyrinth of the bird. It certainly is a very general condition, but, as will be seen later, it is not absolutely true of all the birds.

The perilymphatic space of the semicircular canals of the bird is always well marked so far as the present writer's investigations go. This is a notable distinction of the labyrinth of the bird from that of the mammals.

The shape of the canals in the bird is in general that of an ellipse rather than of a semicircle. The superior canal, however, varies considerably in shape, and no constant types can at present be described. This canal is always the largest, or rather has been found to be so, in all the examples hitherto examined.

The vestibule is relatively small. It usually contains otoliths of a size easily seen by the naked eye. They are flattened and are of various shapes. The most usual number of otoliths found in the vestibule is two.

The cochlea of the bird consists of a more or less straight tube. It passes a little downwards and then inwards and forwards. There is usually a slight curve on it with the concavity directed backwards and a little upwards. The main branch of the cochlear nerve runs along the posterior border of the cochlea and sends fila-

ments forwards to the organ of Corti. At the tip of the cochlea, however, the nerve radiates out like a fan into the lagena, and at this spot there is in many birds a saddle-shaped otolith with the concavity directed outwards.

The ampullæ of the semicircular canals of birds differ from those of the mammalia. They are usually set at a more acute angle with the canal as it leaves them. The nerve to the ampulla cuts into it, so to speak, and partially divides the ampulla into two portions, one adjacent to the vestibule and the other adjacent to the canal itself.

THE LABYRINTH OF THE CRESTED SCREAMER (*CARIAMA CRISTATA*).

The term "crested screamer" is applied to two quite different birds. That from which the labyrinth was taken and prepared by the writer and forms the subject of this description is closely allied to the cranes, and has no relation to *Chauna cristata*, which is related to the ducks and geese. According to some ornithologists, *Cariama cristata* is more closely allied to the hawks than to the cranes. The bird lives in the southern parts of Brazil and Paraguay. It will only fly if hard pressed, the usual method of progress being a stooping run. In some of its habits it is like a bustard; its note is a scream or bark. It lives in the high grass, and the habits of the bird are diurnal.

The labyrinth is rather large for the size of the bird, measuring 15 mm. from the uppermost point on the vertex of the superior canal to the innermost point at the tip of the cochlea.

The cochlea is very straight in this bird, the usual curve being almost entirely absent. It measures 6 mm. in length from the front of the round window to the tip of the organ. This is a long cochlea for a bird, that of the ostrich being the only one out of the nine which have been examined that is longer. The diameter of the tube of the cochlea immediately in front of the round window is 2 mm. in length. At the tip of the cochlea the nerve widens out into a spade-shaped structure, and a minute straight otolith is present at this point.

The vestibule measures 3 mm. in its longest diameter, and there is a very small otolith present in the utricle. The macula neglecta is to be seen close to the opening of the cochlea.

The superior canal is much the largest and, roughly speaking, is in the form of an ellipse with the long axis directed upwards and backwards.

The superior canal measures 6 mm. internally and 8 mm. externally. The height of the vertex of the canal above the vestibule is 6 mm., and the diameter of the canal itself at the vertex is 1 mm. The posterior canal is next in size to the superior and is also in the form of an ellipse. It measures 4 mm. in its internal diameter and 6.5 mm. externally. The height of the canal above the vestibule is 3 mm., and the diameter of the canal itself at the vertex is 1.5 mm. The common limb of the superior and posterior canals is very much shorter than is the case in any of the mammals. The horizontal canal is the smallest of the three and is elliptical in shape, the major axis being in the horizontal plane. It measures 3.5 mm. in internal and 6 mm. in external diameter. The height of the canal at the vertex from the vestibule is 3.25 mm., and the diameter of the canal itself at the vertex is 1.5 mm.

As is the case in most of the birds, there is a communication between the horizontal and superior canals at the point at which they cross, but the opening is very small. The horizontal canal does not project so far backwards in the crested screamer as in the majority of birds, and this gives to these two canals an arrangement similar to that found in the mammals.

The perilymphatic space is well marked in all the canals.

THE LABYRINTH OF THE MASAI OSTRICH (*STRUTHIO MASAI*).

In so far as the writer's investigations go, no examination has been made of the labyrinth of this division of the order of birds. It is, however, one of the most interesting on account of the fact that these birds are less distantly removed from the reptiles than any others.

Unfortunately, both the labyrinths which the writer obtained were broken, and it is therefore impossible to give a description of the complete organ. The most important parts were not destroyed.

So far as could be judged from the broken specimens, the whole organ measured about 17 mm. in length. The cochlea is relatively small and measured only 6.5 mm. in length. It has a stumpy appearance and the backward curve is very well marked. The nerve spreads out fan-like at the tip of the organ and at this point there are several small otoliths arranged in the form of a saddle, with the concavity directed outwards. This plurality of the otoliths at the apex of the cochlea is not found in any of the other birds which have been examined, though the single otolith, which is so often found here, is also saddle-shaped and has the concavity

in the same direction. The diameter of the tube of the cochlea just in front of the round window is rather more than 2 mm.

The vestibule is an irregular cavity and measures a little more than 3 mm. in its greatest diameter. It contains two large otoliths. Both of these are flat. The largest, which lies close to the ampullary openings of the superior and horizontal canals, is roughly circular in shape. The second and smaller one is almost square and lies about 1 mm. below and internal to the first. Both the otoliths are milk-white in colour. The oval window measures 2.5 mm. in its longest diameter.

As far as can be judged from the broken specimen, the superior canal is in the form of an ellipse, with the longest diameter lying backwards and upwards. It is much the largest of the three, measuring 7.5 mm. in its internal and 11 mm. in its external diameter. The height of the vertex of the canal above the vestibule is about 9.5 mm., and the diameter of the canal itself at the vertex is 1.5 mm. The posterior canal is also in the shape of an ellipse, with the long diameter in a vertical plane. It measures 5.5 mm. in its internal and 8.5 mm. in its external diameter. The height of the vertex of the canal above the vestibule is only 3.5 mm., and this gives to the canal a somewhat squat appearance. The diameter of the canal itself at the vertex is 1.5 mm. The horizontal canal is the smallest of the three, and, like the posterior, is of a squat appearance. It measures rather more than 4 mm. in its internal and 8.5 mm. in its external diameter. The diameter of the canal itself at the vertex is 1.25 mm.

A very interesting feature of the canals of the ostrich is the fact that there is no communication between the posterior and horizontal canals at the point at which the arch of the latter passes under that of the former. There is a distinct though narrow interval between them which is filled up with bone in the unprepared subject. This feature of the labyrinth of the ostrich is unique in birds so far as present investigations have shown, but it may be found in other birds of the same class. A specimen of the rhea is now in course of preparation, and it will be interesting to see if this feature is repeated in that bird.

PERSISTENT UNILATERAL HEADACHE DUE TO NÆVOID CHANGES IN THE ANTERIOR EXTREMITY OF THE MIDDLE TURBINAL BONE.¹

BY WYATT WINGRAVE, M.D.,

Pathologist (lately Physician) to the Central London Throat and Ear Hospital.

THE pathogeny of severe focal headache is somewhat speculative, and this case is recorded partly from its instructive and definite morbid anatomy, and also because it affords an explanation for the occasional want of success in treating the middle turbinal body by cautery and local depletory measures, for symptoms attributed to hypertrophy of that structure.

The patient, a healthy-looking male, aged thirty-eight, sought relief for severe and persistent frontal pain of three months' duration, dating from an attack of influenza. The pain was referred to the left supra-orbital and frontal regions, extending to the vertex and occasionally to the corresponding eye. It varied in severity, but never left him, and was at times so acute as to interfere with his clerical duties and to cause him much anxiety. There were frequent attacks of coryza, which generally afforded partial relief, and he had been treated for migraine and hay asthma.

He was an enthusiastic athlete, of regular habits, temperate in tobacco and alcohol, but thought that he was gouty and had a tendency to piles. His sole illness of any importance was influenza, from which he had suffered several attacks, the last one leaving a persistent nasal catarrh which had, however, nearly disappeared, but in spite of special treatment the pain did not diminish.

Upon examination the right nostril was found to be quite free, but the left breathway was distinctly less in volume, due in part to a slight septal deviation, but chiefly to a marked hypertrophy of the left middle turbinal, which completely blocked the meatus. Probing was very painful, but yielded no evidence of bone-lesion, and there was no sign of pus. Under cocaine the turbinal became pale but diminished only slightly in size. On transillumination the maxillary and frontal sinuses proved to be perfectly clear and symmetrical; still, it was felt that the unilateral pain, together with the tenderness and hyper-

¹ Since writing this report a paper has been read by Dr. Smurthwaite at Toronto on "Headache connected with Enlarged Middle Turbinal." Similar treatment is advised, but the pathology is different.

trophy of the middle turbinal and the history, strongly pointed to some sinusal trouble probably due to drainage obstruction.

Local sedatives, general depletion, and bromides for a week affording no relief, the anterior end of the middle turbinal body was removed under alypin and adrenalin chloride by means of a Krause's fine wire snare, which cut through the bone with ease. This was followed by free hæmorrhage lasting about fifteen minutes, but the pain gradually ceased, and in the course of half an hour he left for home perfectly comfortable. No discharge of any kind beyond bleeding attended or followed the operation, and subsequent examination and treatment revealed no evidence of sinusal complications. He made a rapid and complete recovery six months later, reporting that he had experienced no return of pain, and enjoyed complete freedom from any "running" from the nose.

The part removed was about the size of a large haricot bean, measuring 15×12 mm. On microscopic examination the mucous membrane appeared normal, but the bony cancelli were found to contain very thin vessels distended with blood and pressing on the walls. There was no evidence of lymphocyte infiltration, nor any osteoplastic activity such as is usually found in inflammatory sinusitis involving the bone. The walls of the distended vessels were thin, consisting only of epithelioid cells; in striking contrast with the arteries, which in some of the adjacent cancelli were quite normal. The condition, which is strongly suggestive of a nævoid state, differs entirely from cavernous distension of the erectile tissue so common in the posterior end of the inferior turbinal, a state which involves the mucous membrane only, and not the bone.¹ Part of the bone was pneumatic and lined with normal membrane, continuous with that of the ethmoid cells, a condition often found in hypertrophy of this part and somewhat loosely described as cystic turbinal.

Although a moderate degree of congestion, both periosteal and endosteal, is often present in sections of removed middle turbinals, in this case it was exceptional, and taken together with the striking coincidental disappearance of symptoms on removal, it may reasonably be interpreted as possessing a causal relationship. The morbid condition may be regarded as a passing nævoid state of the spongy bone, possessing no resemblance whatever to any inflammatory process such as rarefying osteitis, necrosing ethmoiditis, suppurative sinusitis, etc. The association of the middle turbinal body with headache and many reflex phenomena is

¹ Vide "Turbinal Varix," *Lancet*, June, 1894.

familiar to all rhinologists, likewise its anatomical relation to the drainage of the hiatus semilunaris, which plays so important a rôle in the nasal accessory sinuses; but in the former connection treatment has been chiefly confined to cauterization and other applications to its mucous membrane only, while removal of the anterior end, including the subjacent bone, generally forms part of the radical treatment of the sinuses. The morbid anatomy of this illustrates the inexpediency of confining treatment to the mucous membrane only, which, having already failed, influenced not a little the adoption of a more radical course.

The operation is extremely simple and quick, there being no necessity for the use of punch-forceps, scissors, etc., when the turbinal is sufficiently prominent to require removal. A strong and fine wire should be used, and if pushed well upwards and backwards will readily engage and rapidly cut through both bone and mucous membrane. Care must be taken to avoid (1) simply stripping off the soft parts, and (2) never to exert any dragging or tearing force, since in patients over forty the ethmoid bone is so spongy as to be biscuit-like in consistence, and consequently extremely brittle. This remark equally applies to the removal of polypi in old people, in whom the osteoporotic changes of the ethmoid are well marked.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Twenty-eighth Annual Congress, held at Niagara Falls, N.Y., May 31 and June 1 and 2, 1906.

President, JOSEPH W. GLEITSMANN, M.D.

(Continued from page 333.)

Third Day, Saturday, June 2—Closing Session, 10 a.m.

Papilloma of the Larynx from Inhaling Flames.

THE history of this case was presented by Dr. A. B. Thrasher, of Cincinnati, whose patient, a man, had been injured two months

before coming under observation by an explosion of gas in the cellar of a drug store. He had had a severe inflammation of the upper air-tract, from which he had made a slow recovery, and had gradually become aphonic. Examination revealed, in addition to a general redness of the parts, several granulomatous-looking masses springing from the ventricles, and almost obstructing the entire cords. Other similar bodies were seen below the cords during forced inspiration. Examination of a fragment removed revealed a papillomatous neoplasm, with some admixture of granulation-tissue. The masses were removed a few at a time, the bleeding following each *séance* being rather profuse. Silver nitrate 10 per cent. was applied to the base of each nodule. A few months later the larynx was sufficiently cleared to allow of a view of both cords, and his voice became considerably stronger. Still later the voice became normal, though no later view of the region was had. The author noted that so far as this one case went, it lent favour to the theory of the inflammatory origin of laryngeal papillomata.

Scleroma of the Larynx.

Dr. EMIL MAYER, of New York City, reported one personal case, his patient being a Russian Pole, girl, aged sixteen. While crossing the ocean three years previously she took cold, and became hoarse. Hoarseness had remained constant. Masses of crusts were expelled together with much secretion from the nose and naso-pharynx, and there had been an increasing dyspnoea. Odour was absent, and the general health had continued good. Some of the crusts were removed and sent to the pathologist, who reported that the condition was scleroma. Dr. Mayer reviewed the literature of the subject, epitomising the statements of various authors. Dr. Mayer stated that the prognosis as to recovery was bad, though the general health might not be impaired save from such symptoms as the varying stenosis would occasion. External conditions have been benefited by the X rays. In the larynx removal of the crusts was often necessary. The pressure of an intubation-tube both before and after tracheotomy had been useful, as had also the Schroetter-tube. The lesion was to be regarded as a chronic incurable one, and to a certain degree contagious. The writer deemed it most advisable that the sanitary authorities take action now with a view to a prevention of further cases, inasmuch as present cases are few and far between, and the problem presents

itself in a comparatively simple form—quarantine officers should not allow cases of scleroma to land.

Two Cases of Bone Impacted in the Larynx.

Dr. JOHN M. INGERSOLL, of Cleveland, reported the cases. Case 1 was that of a man with progressive inspiratory dyspnœa leading up to cyanosis, and necessitating tracheotomy. The following day examination showed complete abductor paralysis of the larynx, a view below the cords being impossible. Above the cords the organ was inflamed, and two ulcerations were made out. Iodide of potash was given but had no effect on the glottic picture. Patient died of septic pneumonia one month later. Autopsy revealed a condition not at all suspected. In addition to the usual septic conditions, a piece of bone irregularly triangular, about 5 cm. long and 2 cm. wide, curved on the flat, was found in a cavity on the posterior wall of the larynx, access thereto being through an ulcer about 2 cm. in diameter. The gullet was intact, and its mucosa normal. The bone had evidently fallen into the larynx during a meal, and had worked its way through the posterior wall of the larynx into the position in which it was found on autopsy. The man gave no history of any such accident. It had evidently pressed on the recurrent nerves and thus led to the paralysis. A second case was also reported with similar initial symptoms, and was supposed to be due to syphilis. Tracheotomy was done to relieve the dyspnœa. All that could be seen was a greyish, rough surface below the cords. Finally, the larynx was split, and a piece of bone was found imbedded on the right side of the trachea just below the larynx. Relief was immediate and complete. In this case also the man had no recollection of ever having swallowed the offending material.

Sarcoma of the Naso-Pharynx; Treatment by Injections of Adrenalin.

Dr. J. E. RHODES, of Chicago, reported the case of a married woman of twenty-two years, with the history of a growth commencing in the throat at the age of ten. When seen by the author there was a mass in the naso-pharynx completely obstructing the choanæ, severe pain, profuse discharge, and all the features of chronic sepsis. Palpation showed an attachment to the naso-pharyngeal wall, and the extension of the mass down nearly to the

edge of the soft palate. It was firm, though not hard, did not bleed easily, and no ulceration could be made out. Microscopical examination of a fragment showed the tumour to be a spindle-celled sarcoma, highly cellular with many lymphoid cells. A consideration of all the features in the case led to a decision against operation. Consequently Dr. Rhodes determined to inject adrenalin through the nasal channels through a long needle, using the following solution: adrenalin grm. 0.12, boric acid 0.60, chlorotone 0.025, water 15.00, of this 10 minims equalled 5 milligrammes of adrenalin chloride. This amount was injected every few days, and a solution of 1 in 1000 adrenalin was applied to the surface. The symptoms were considerably relieved by this plan of treatment, but the patient died in about two months from exhaustion. The author referred to other cases similarly treated by others and believed that the method deserved a further trial. Reference was also made to the physiological effect of the remedy. Caution was suggested as requisite in this special application of it. It had been found, by animal experiment, that arteriosclerosis sometimes followed its prolonged administration.

Dr. C. F. THEISEN said that a pathologist in one of the Albany laboratories had produced myocarditis in animals by injection of adrenalin.

Dr. J. PRICE-BROWN had found that adrenalin had an effect in checking the circulation in sarcoma, and lessened bleeding. In this disease the characteristic secondary reaction of the remedy seemed to be wanting.

Dr. D. BRYSON DELAVAN did not believe in the theory of the secondary reaction of adrenalin. In his experience it had been entirely wanting. Clinically speaking, the reports of hæmorrhage after the use of the remedy had been inconclusive. Hæmorrhage occurred in a certain number of cases any way, and it was not clear to his own mind, at least, that adrenalin had anything to do with it.

Dr. E. FLETCHER INGALS had had excellent results from injections of lactic acid in the case of naso-pharyngeal sarcoma. It should be begun in 15 per cent. strength and gradually run up to 35 per cent.

Dr. NORVAL H. PIERCE stated that after injections of adrenalin or its local use on mucous membranes, streptococci and staphylococci were greatly increased in virulence. He would utter a caution in the use of the remedy.

*The Removal of Adenoid Vegetations through the Nasal Passages
by a new Method.*

Dr. OTTO T. FREER, of Chicago, finds objections to the various forms of curette and ring-knife now so generally employed, claiming that they do not afford clean and sufficient removal of the offending masses. If the latter are at all tough the blade is apt to slip over them. Moreover, the ramifications of the nasopharyngeal cavity are such that no ring-knife or similarly constructed instrument will reach them. Hence Freer prefers to operate through the nasal fossæ, and has devised for this purpose a slender forceps with a smoothly rounded beak. It is of the general model originally devised by Ingals for the removal of bone in the nose. At first sight it would seem as if the instrument was too large to pass through the nose, but experience has shown that there is no difficulty in this respect. The author uses chloroform anæsthesia combined with cocaine in 10 per cent. solution, and has had no difficulty with this combination.

Dr. E. FLETCHER INGALS did not feel as safe as did the author of the paper in regard to the use of cocaine on children. He had used Dr. Freer's method of operating for many years except that he did not try to remove all the growth in that way.

Dr. J. H. BRYAN also shared the feelings of the previous speaker as to cocaine. In addition, he believed chloroform (Dr. Freer's preference) to be positively dangerous.

The same aversion to chloroform was also expressed by Dr. Emil Mayer.

Dr. J. SOLIS-COHEN had always used chloroform in adenoid operations, and had never seen any harm result therefrom. His method had been to have the nose held at first so that the patient would breathe through the mouth, and to commence the anæsthesia with a little cologne, chloroform being gradually added.

Dr. T. H. HALSTED had had one death from chloroform in an adenoid operation.

Dr. J. E. RHODES had used Dr. Freer's method and said it was surprising to find how completely one could reach every part of the naso-pharynx. He had abandoned chloroform in this connection and used now ether by the drop method.

Dr. WILLIAM LINCOLN shared in the fear of chloroform and said that all mouth-breathing would not disappear after the removal of adenoids, as there were other factors in its production.

Dr. JOHN R. WINSLOW called attention to the fact that there

were many variations in the contour of the naso-pharynx, and that this fact should determine the choice of instruments. As to chloroform he did not think that the modern graduates understood as well how to administer it as did their predecessors.

Dr. FREER said that he had never had trouble with either cocaine or chloroform. The danger ascribed to the latter drug was often really due to the dropping back of the tongue, while at the same time nasal breathing was hindered by the adenoids.

Mouth-Breathing.

Dr. WILLIAM LINCOLN, of Cleveland, read a short paper with this title, and illustrated his remarks with lantern slides. He called attention to the fact that many children remained mouth-breathers after adenoids and enlarged tonsils had been removed, but the patients had often suffered so great a distortion of the osseous framework of the face, particularly of the upper and lower maxillæ and their arches, that no amount of work by the rhinologist alone will relieve the difficulties from which they suffer. The dentist is the one who can help the sufferer out. Under normal conditions the mouth is closed and the teeth and lips properly apposed by the normal tonicity of the facial and buccal muscles, but when the latter are weakened by altered bone-conformation the jaws are closed and held together only by conscious effort. During sleep the jaws drop apart. Sometimes the posterior molars come together in such a way that it is impossible for the incisors to meet. Thus the jaws are locked. The determination of cause and effect in the study of these deformities of the facial bones and lymphoid hypertrophies is not easy. Either condition may be provocative of the other. Adenoids and tonsils may weaken the growing child so that dentition is delayed and teeth-decay is started, and the whole framework of the face and whole body retarded and weakened in texture. Locally, it seems probable that if the lymphoid masses are large they may by slight but constant pressure change to some extent the correct relation of the upper and lower maxillæ. On the other hand, the normal width and shape of the maxillary arches being disturbed, there must follow septal deformities, turbinal distortion, and enlargements, and, in consequence, encroachments on the lumen of the nares, rendering nasal breathing impossible or very difficult, whereby in turn the naso-pharynx suffers and adenoids ensue. The slides shown illustrated the changes in jaw-conformation produced by proper dental prosthesis.

Malignant Disease of the Tongue.

Two cases were reported by Dr. J. H. BRYAN, of Washington, D. C. Case 1 was that of a man of sixty years with an indurated ulcer on the right border of the tongue at its posterior third. Strong irritants had given it an inflamed appearance. No glands were found. Diagnosis: malignancy. The patient was operated on by Mr. Butlin, of London, who, after doing a preliminary laryngotomy, excised the whole right half of the tongue. Twelve days later a complete dissection was made of all the glands of the neck. Nothing was found in them suggestive of cancer, but the mass removed from the tongue was found to be a squamous-celled carcinoma. He returned to his home in America and remained well for about seven months, when a swelling appeared in the opposite side of the neck. This was removed, but the next day after the operation the patient developed a hemiplegia, and he died of a pneumonia forty-eight hours after operation. Case 2 was that of a man of seventy years, who had for some time suffered from dysphagia without apparent cause. Later, there developed a mass at the base of the tongue projecting out of the larynx and suggestive of an exaggerated degree of œdema of the epiglottis. There was no pain. The growth bled easily on examination. There was a small glandular enlargement on the left side of the neck at about the bifurcation of the common carotid artery. Examination of a fragment of the growth revealed it to be a surface epithelioma without the formation of pearls. The Kocher operation was performed, it being shown that attachment was to the tongue and not to the epiglottis. Recovery was slow but interrupted. Eight months later the patient was doing fairly well, though troubled somewhat with difficult articulation and accumulation of fluids in the month.

Examination of the Throat in Chronic Systemic Infections.

This paper was presented by Dr. J. L. GOODALE, of Boston. He referred to frequent consultations he had had with orthopædists in regard to the relation of throat conditions to chronic arthritis. The question was constantly arising, Did the throat condition account for enlarged cervical glands, and was it the point of entrance for the joint infections? The paper was confined to the consideration of tuberculous lymph-nodes and infectious arthritis. Experience has shown that the removal of a septic focus has often

relieved the joint symptoms. Ten cases were reported showing that tuberculous cervical adenitis may exist in association with the presence of tubercle bacilli in enlarged tonsils, with or without visible change in the latter, and is not necessarily affected by tonsillar removal; and secondly, that a form of cervical adenitis exists, accompanied by distinct enlargement and subacute or chronic inflammation of the tonsils, and disappears after their excision. In the first place it appears reasonable to assume that a penetration of bacilli takes place through the tonsils into the glands, and in the second that an absorption of irritating material has occurred, being generated in the tonsils and conveyed to the glands. Removal of the focus of toxin-production is naturally followed by immediate relief. The author then discussed the matter of the modes of penetration of such irritating and infecting material through the tonsils, maintaining that it would be favoured by an increase in the size and number of the intercellular spaces of the lacunar epithelium and the retention of the crypt contents. In regard to chronic arthritis it may be true that this condition is due to a specific organism, and it is certainly likely, nay more, probable, that such organism is constantly present in the mouth, and that certain patients are peculiarly susceptible to it. Given this systematic predisposition, local vulnerability would become of importance in determining an attack. It is, therefore, necessary to seek for the place of diminished resistance. This may be in the throat, and in all such instances the tonsils should be carefully examined. The arthritic individual, predisposed to rheumatic infection, finds in certain remedies, diet, etc., means for resisting infection, or in controlling development of bacteria after their entrance. The examination of many cases of infectious arthritis has shown pathological alterations in the tonsils, characterised in general by the retention of the lacunar detritus, with or without enlargement of the tonsil. Hence, if in these joint cases other portals of infection are eliminated, it is logical to thoroughly extirpate the tonsils. Thus a tissue of diminished resistance will be replaced by a stout barrier of compact structure without nook or recess to harbour a pathogenic parasite.

Etiology of Hyperkeratosis of the Tonsils.

Dr. GEORGE B. WOOD, of Philadelphia, presented a paper on this subject. He took strong issue with those writers who have ascribed the disease to the effect of a specific infection, the lepto-

thrix, declaring that neither this nor any other micro-organism stood in such causal relationship. He maintained that it would be as rational to hold the dirt and grime of a miner's hand responsible for the production of the horny layer of the skin as to believe that such a saprophyte as the leptothrix is responsible for what is really a callous tonsil. There is, it is true, a rather acute infection of the throat in which this organism is probably the exciting cause, but such infection is not limited to the tonsillar tissues, and may occur in any portion of the body in which vital resistance has been lowered and to which the organisms have obtained access. True hyperkeratosis is limited to lymphoid tissue portions of the throat. The true explanation of the condition under discussion is found in the behaviour of the epithelium lining the tonsillar crypts. These are dilated and filled with a horny mass which emerges at various points into the epithelium. The latter is in a state of active growth, which results in the formation of the keratoid plugs. Other changes may occur, but this change in the epithelium of the crypts is the characteristic pathologic feature of hyperkeratosis. The author is of the opinion that the cryptal epithelium is a primogenial source of lymphocytes. At the bottom of the whole process is a decreased functional activity of the tonsil, while a portion of the cryptal epithelium still possesses its physiologic tendency toward growth.

Dr. J. H. BRYAN opened the discussion on the two last papers on tonsillar conditions. He had had one case in which accumulation in the tonsillar crypts had seemed to stand in a causative relation to arthritis. It was too early to speak positively.

Dr. THOMAS HUBBARD believed this subject to be a most timely one. They should endeavour to remove tonsils before the child had absorbed enough poison to lead to rheumatic outbreaks, with consequent cardiac valvular lesions. He had had an interesting series of cases of keratosis occurring in the same family.

Dr. H. L. SWAIN spoke in commendation of Dr. Goodale's work, which showed, however, that it was not possible always to tell whether tonsils were healthy or not until they had been removed and examined. The statements made in the paper called for a more serious consideration of tonsillar diseases in their relation to systemic infection than had been the custom to give.

Dr. EMIL MAYER noted that the removal of cheesy contents from tonsillar crypts often cured obstinate cough.

Dr. GOODALE, in closing the discussion, said that the tonsil was only one of a large number of glandular structures, and it would

be interesting to know if what was true of it was true also of other lymphoid deposits such as those in the small bowel. In all suspicious cases one should never omit to carefully examine the tonsils in search for sources of infection.

Dr. WOOD, in closing, begged to add one or two words on the subject of epithelial metamorphosis. He noted that the thymus, essentially an adenoid structure, had been shown to develop from the epithelial cells forming the original anlage. No leucocytes appeared in the blood until they had occurred in the developing thymus. As the thymus disappeared the tonsils developed, and later the solitary lymph-follicles of the intestine and the lymphatic tissue of the appendix very possibly carried on this manufacture of leucocytes.

Mixed Tumour of the Soft Palate.

Dr. T. H. HALSTED, Syracuse, New York, reported a case of a man aged fifty-five, complaining of recent sore throat and hoarseness. He had had similar attacks for fifteen years or more. Examination showed an appearance about the left tonsil suggestive of quinsy, with superficial inflammation of all the surrounding parts, but the swollen area was very hard to the feel. The superficial inflammation quickly cleared up, leaving the appearance of an enormously enlarged tonsil buried between the pillars, and almost entirely covered by them. The swelling was greatest in the soft palate above the arch and was pushing the posterior pillars backward, and largely obstructing the left side of the naso-pharynx, extending up to the Eustachian orifice. The mass was of stone-like hardness, and had a nodular surface. There were no enlarged glands, cervical swelling, or history of bleeding. A diagnosis of malignant growth was made. Later there was some bleeding from the throat, but no change in appearance. The mass was removed under local anæsthesia without difficulty or special incident. The tumour was of oval shape $7 \times 4 \times 5$ cm. in measurement, and contained several small cysts. Recovery was rapid. At the end of seven months there had been no recurrence. The microscopical diagnosis was a cylindroma evidently originating in connection with the parotid gland (possibly an aberrant portion), or in connection with mucous glands.

Cases of Sarcoma.

Dr. THOMAS HUBBARD, of Toledo, presented the reports of two cases. The first was that of sarcoma developing in fibro-myxoma of

the epitonsillar space. His patient was a man of forty years with a mass, ovoid in shape, and about two and one inch and a half in the longest diameters, situated just above the left tonsil and in the substance of the soft palate. Nodules gave it an irregular surface, and these nodules appeared very vascular. The mass was enucleated under Schleich infiltration anæsthesia. No return ten months after operation. Microscopical diagnosis: mixed-celled sarcoma. The second case was sarcoma of the neck following extirpation of the tonsil. Patient was a man of thirty years whose tonsil was removed following enlargement of the cervical glands, the whole picture being suggestive of malignancy. The glands did not subside but gave evidence of harbouring some septic process, and finally the whole glandular mass was excised. The microscope revealed a small round-celled lympho-sarcoma of a compound lymph-gland. The patient lived only two months, and before death presented the usual symptoms following involvement of the vagus and its branches.

During the Sessions of the Congress the following papers were read by title: *Remarks on Sub-mucous Resection of the Nasal Septum and also on the Merits of Oblique Incisions in Correcting Septal Deviations*, by Dr. Thomas R. French, Brooklyn; *The Treatment of Cancer of the Larynx by the Subcutaneous Injection of Pancreatic Extract (Trypsin-Fairchild)*, by Dr. Clarence C. Rice, New York City; *Hysterical Aphonia and its Correction by the Use of the Falsetto Voice*, by Dr. D. Braden Kyle, Philadelphia.

The following Active Fellows were elected: Dr. D. Crosby Green, jun., Boston, thesis, *The Lymphatic Drainage of the Larynx*; Dr. William L. Ballenger, Chicago, thesis, *The Clinical Anatomy of the Tonsil*; Dr. Norval H. Pierce, Chicago, thesis, *Laryngeal Phlegmon*; Dr. John R. Winslow, Baltimore, thesis, *What is the present Status of the Operative Treatment of Deviation of the Nasal Septum? A critical Review, based on Literature, and especially a Personal Experience of 121 Cases operated on by Various Methods*.

Officers for the ensuing year were elected as follows: President, A. W. de Roaldes, M.D., New Orleans, La.; First Vice-President, G. Hudson Makuen, M.D., Philadelphia, Pa.; Second Vice-President, A. B. Thrasher, M.D., Cincinnati, Ohio; Secretary and Treasurer, James E. Newcomb, M.D., 118, West 69th Street; Librarian, J. H. Bryan, M.D., Washington, D.C.; Member of

Council to serve for four years, J. W. Gleitsmann, M.D., New York City.

The meeting for 1907 will be held at Washington, D.C., in connection with the Triennial Congress of that year.

PROCEEDINGS OF THE BELGIAN SOCIETY OF OTOLOGY, LARYNGOLOGY, AND RHINOLOGY.

The Annual Meeting, held at Brussels, on June 9 and 10, 1906.

President: DR. J. LECOCQ.

PRESENTATION OF ANATOMICAL SPECIMENS.

Dr. TRÉTRÔP (Antwerp): *Large Abscess of the Brain, following Purulent Otitis Media.*

The patient, who had suffered from suppuration of the middle ear for three months, was brought to the hospital in a state of unconsciousness. A radical operation was performed immediately and pus was found; the roof of the antrum appeared intact. After the operation the patient's condition was satisfactory; she recovered consciousness, and there was no fever, vomiting, or motor troubles. At the first dressing, on the fifth day, the wound looked healthy; but on the sixth day the patient expired. At the autopsy a large abscess of the posterior half of the three chief temporal convolutions was found, and the remains of a cured osteitis of the roof of the antrum. The author insists on the necessity of operating early upon patients with acute purulent otitis media who present a dehiscence of the postero-superior wall of the meatus and mastoid pain. In cases of abscess of the brain, when the lesions are situated outside the motor area, it is often impossible to diagnose the seat of the lesion or even to differentiate it from certain forms of meningitis.

Dr. V. DELSAUX (Brussels): *Stereoscopic Photographs of Killian's Rhino-phantom.*

Dr. LECOCQ (Wasmès): *Gigantic Polypus removed from a Female aged sixty.* The growth weighed 100 grammes.

Dr. CHARLES EMILE DELSAUX (Liège): Microscopic sections—*Tuberculosis of the Septum and Lupus of the Nose.*

In the first instance the case was one of tuberculosis of the septum, as was clearly shown by microscopic examination. It was treated by curetting, the galvano-cautery, and applications of lactic acid. The disease recurred after three months, when the author detached the ala nasi and extirpated the tumour widely, hoping thus to obtain a complete cure. Some months later a nodule of lupus developed in the scar of the incision.

Dr. BÔVAL (Charleroi): *Radiograph of a Patient wearing a Tracheotomy Tube, and with a Revolver Bullet lodged in the Left Side of the Neck opposite the Lower Part of the Thyroid Cartilage.*

When the shot was fired the patient had instinctively bent his head and raised his arm. The ball, having passed through his arm, entered at the angle of the jaw on the right side, traversed the larynx, dividing both vocal cords, and finally lodged outside the left thyroid cartilage.

Dr. BÔVAL: *Radiograph of a Coin lodged in the Œsophagus of a Child aged Four, at the Level of the Second Dorsal Vertebra.*

The coin was ejected during a fit of vomiting.

Dr. LABARRE (Brussels): *Laryngocele of the Ventricle; an Air-containing Cyst connected with the Left Ventricle of Morgagni.*

Upon laryngoscopic examination this tumour presented all the characters of a cyst with liquid contents, and seemed to be developed at the expense of the left ary-epiglottic fold. Galvano-caustic puncture was practised several times without effect, and it was then decided to make use of the hot snare. The whole tumour was removed by this method with the greatest ease, and at the same time the true diagnosis was established. Such cases are very rare. Records exist in medical literature of four cases only in which the laryngocele was strictly confined to the interior of the larynx. Usually the cyst communicates with a second pocket on the outside. It is this form which is found very frequently in certain monkeys, and has been made the subject of an interesting study by Meyer. In the present case it appeared that there was a congenital abnormal prolongation of the anterior part of the ventricle of the larynx. In consequence of troublesome fits of coughing during an attack of tracheo-bronchitis, the diverticulum,

under the sudden increase of air-pressure, became dilated and formed the tumour described above. It was noted that the size of the tumour was hardly influenced by the respiratory movements. Most authors advise laryngotomy, but Labarre prefers the hot snare even when there is a second pouch outside the larynx; the latter can always be removed by a subsequent operation.

Dr. HAMAIDE (Brussels): *Stenosis of the Larynx Consecutive to Intubation.*

The larynx of a child, aged six, showing a dense cicatrix in the subglottic region and particularly at the level of the cricoid, which had caused complete occlusion of the respiratory space. This cicatricial stenosis followed intubation.

Dr. Cheval saw the child and proposed to perform laryngofissure, but the operation was declined; he then dilated the contracted part of the larynx with Schrötter's dilator. After two or three months of treatment the patient was lost sight of.

Some years later the medical man in attendance found that the whole of the subglottic part of the larynx was obstructed by cicatricial tissue. In order to remedy this condition he thought of dividing the fibrous tissue by means of a knife attached to the end of the handle for O'Dwyer's tubes, and he thus succeeded in making a passage. He then introduced a T-shaped cannula from below upwards through the tracheal wound, intending to progressively increase the calibre of the ascending portion. Unfortunately, the tube became plugged with mucus and the child died on the way to the hospital. The author thought that instead of having recourse to secondary tracheotomy it would have been better in this case not to abandon intubation, but to vary the calibre of the tubes. But when the stenosis was once established, thyrotomy, with excision of the cicatricial tissue, was clearly the operation of selection.

PRESENTATION OF INSTRUMENTS.

Dr. BROECKAERT (Ghent): Forceps for naso-pharyngeal polypi.

Dr. TRÉTRÔP (Antwerp): (1) An antiseptic case for use at the patient's house; (2) a face protector against infection consisting of a very thin piece of curved celluloid, fitted with a spectacle-frame; (3) a pocket battery for use with Clar's mirror; (4) a transformer for the galvano-cautery.

Dr. LABARRE (Brussels): (1) An antiseptic metal stand for bottles; (2) a small steriliser for instruments and dressings.

Dr. V. DELSAUX (Brussels): Laryngeal curettes with the cutting edge on the left, on the right, and below respectively; for removing small polypi of the vocal cords which cannot be removed by forceps.

PRESENTATION OF PATIENTS.

Dr. VAN DEN WILDENBERG (Antwerp): *Osteomyelitis of the Superior Maxilla and of the Ethmoid, with Suppuration in the Sinuses and in the Orbit.*

On the third day after birth a new-born child showed a little red mark at the inner and lower margin of the left orbit, which extended more and more. Some days later the following symptoms were noted: pronounced proptosis of the left eye, which was pushed upwards and outwards, a discharge of pus from the corresponding nostril, and a similar discharge from a fistula in the hard palate. There was also a fistula in the canine fossa, and it was found necessary to make an incision below the inner angle of the eye in order to give exit to pus. The left nostril was full of pus.

An incision was made from the nasal process of the frontal bone along the inner border of the orbit and along part of the lower border. The periosteum was then raised from the inner and inferior walls of the orbit, nearly as far back as the optic foramen. Small sequestra were met with in the lamina papyracea of the ethmoid, which were easily removed, and two large closed ethmoidal cells were found containing pus. A free communication was made with the nose and a gauze drain inserted. To avoid injury to the dental follicles, the internal wall of the antrum was perforated. The exophthalmos totally disappeared; the nasal discharge continued for three weeks, during which five small sequestra came away. The maxillary sinusitis was treated by irrigation. Although there was no specific history the case appeared to be one of congenital syphilitic necrosis, and a course of small doses of calomel was therefore ordered.

Dr. VAN DEN WILDENBERG: *Cyst of the Maxillary Sinus.*

A patient who had been operated on for a large projecting cyst of the left maxillary sinus of dental origin (lateral incisor).

The author drew attention to a symptom indicated by Gerber

which is nearly constant, and which he had met with in the greater number of dental cysts, viz. the presence of a bluish resisting tumour below the anterior extremity of the inferior turbinal.

Dr. COLLET (Brussels): *A Series of Patients operated upon by Evacuation of the Ethmoid from the Nostril.*

Amongst the series of cases thus treated in the clinique of Dr. Delsaux the author had selected those which appeared most interesting, namely, old-standing and obstinate cases, which had undergone various forms of treatment beforehand. Speaking generally, the symptoms were usually the same. There was nasal obstruction and persistent nasal discharge, anosmia, and headache. But what troubled the patients most was the continual state of congestion, with vertigo, buzzing, and dizziness. In every case the nose contained polypi.

The author prefers Luc's forceps, modified by the adaptation of a joint like that of Grünwald's. With this instrument, after the use of cocain, the middle turbinal was removed, and then the small polypi concealed in the ethmoidal cells. It was the detection of such little polypi a week or a fortnight after each procedure which determined the next operation. As many as ten or twenty consecutive operations had been performed for each of these patients. This treatment is tedious and painful, but in the end all suppurating cavities are laid open and drained and the discharge ceases.

Dr. GORIS (Brussels): *Disturbances of the Recurrent Nerves following Thyroidectomy.*

A girl, aged fifteen, complained of oppression and discomfort in the region of the thyroid gland. There was a slight swelling due to hypertrophy of the thyroid body, but no compression of the trachea.

Treatment by iodide of potassium for several months gave no relief. The case was under observation for a year, at the end of which the author performed an operation at the patient's request. A large thyroid tumour was removed, of which the greater part lay behind the sternum. At the moment of tilting the tumour out of the chest the patient had a violent spasm of the glottis, which ceased as soon as the operator divided the tumour in two, preparatory to performing tracheotomy, the necessity for which was thus avoided. Both recurrent nerves had been strongly stretched, but not cut. The right nerve was dissected out with some thyroid

tissue adherent to it; the left recurrent was injured during the ligation of the inferior thyroid artery.

With the laryngoscope the vocal cords are seen to be immobile in a state of semi-tension.

Dr. GORIS: *Total Resection of the Superior Maxilla for Carcinoma.*

The malignant tumour sprang from the sphenoidal sinus, destroyed the ethmoid, and invaded the whole of the maxilla. At the operation it was necessary to dissect the neoplasm from the muscles of the eye and to follow it into the sphenoidal sinus, of which the lower, the internal, and the external walls were resected. In spite of the hazardous nature of the operation, the patient's vision has remained good.

Dr. JAUMENNE (Brussels): *A Case of Radical Mastoid Operation performed painlessly without Artificial Anæsthesia.*

The patient, suffering with caries of the middle ear, showed also hysterical symptoms, amongst others profound anæsthesia of the tympanum, the meatus, and the retro-auricular region. During the operation the patient showed no signs of pain, and afterwards he declared that he had not felt anything.

Dr. BROECKAERT: *A Case of Ozæna Cured by Submucous Injections of Paraffin more than three years before.*

A woman, aged twenty-three, shown in 1903 as a case of typical atrophic catarrh or ozæna, cured by injections of liquefied paraffin in five sittings. Since then she had had no treatment whatever, and the cure was maintained; there were no crusts, no fœtor, and no headache, and the sense of smell had completely returned.

In the discussion which followed Dr. LERMOYEZ remarked that there was still a notable enlargement of the nasal fossæ, showing that the dilatation is not the cause of the ozæna and that the injections of paraffin do not act by reducing the calibre of the nostrils, but by modifying the nutrition of the mucosa.

Dr. A. CAPART (Brussels): *Naso-pharyngeal Fibromata.*

A series of cases improved or cured by electrolysis.

Dr. SCHIFFERS (Liège): *Epithelioma of the Larynx.*

The author reported the condition of a patient from whom he had shown microscopic sections of epithelioma of the larynx in

June, 1904. The lesion was strictly confined to the left side; the tumour was the size of a large haricot bean, having the clinical characters of epithelioma. It was inserted at the internal edge and lower surface of the vocal cord, with invasion of the subglottic region. After various intra-laryngeal operations, and in view of the recurrences, thyrotomy was proposed, but was declined by the patient. After fresh attempts no further recurrence had taken place for two months. There was only slight dysphonia and the general condition of the patient was satisfactory.

Dr. PARMENTIER and Dr. FALLAS (Brussels): *Papillomata of the Vocal Cords.*

A child, aged six, suffering from intermittent attacks of dyspnoea, with hoarseness of voice and inspiratory stridor. The attacks began after a chill four months before.

On laryngoscopic examination the vocal cords were hidden and the anterior half of the larynx obstructed by red sessile polypoid growths, situated in the region of the false cords above the ventricular bands.

Dr. L. BECO considered that the condition was not papilloma, but a form of hypertrophic laryngitis, probably with a tuberculous basis.

Dr. MOURE advised ablation with forceps, followed by curetting and cauterisation.

Dr. BAYER and Dr. CAPART were of opinion that the growths were inflammatory and not true papillomata.

(1) Dr. FALLAS (Brussels): *Some Cases of Laryngeal Stenosis. Narrowing of the Larynx, with Paralysis of the Left Vocal Cord.*

A man, aged twenty, in attempting suicide, cut his larynx across the crico-thyroid membrane. The parts were carefully sutured, and the patient left the hospital cured. However, the laryngoscopic image was not normal; there was a prominence below the left vocal cord which led to stenosis later on. The patient had a sudden attack of suffocation, necessitating tracheotomy, which recurred whenever an attempt was made to remove the tube. The cicatricial contraction had then involved the left side of the larynx, including the left vocal cord; the right cord was paretic. The occlusion rapidly became complete; the cords, which were reddened and adducted, hindered any view of the subglottic region. Upon opening the larynx from the outside, it was seen that there was

complete subglottic stenosis. Various attempts were made to establish a passage but in vain.

(2) *Subglottic Abscess ; Consecutive Stenosis.*

A child aged twelve was taken to the hospital in a state of asphyxia. As attempts at intubation failed, a tube was introduced through the crico-thyroid membrane. The following day a discharge of pus took place when the wound was dressed. With the laryngoscopic mirror a subglottic abscess was seen with an opening below the left cord. After the abscess had healed the tube could not be dispensed with, although intubation was practised several times. Later on the ventricular bands became infiltrated and swollen, hiding the glottis. The larynx was opened and numerous granulations were removed from below the glottis and the tracheal cannula was inserted lower down. The stenosis returned and new attempts at dilatation failed.

(3) *A Case of Laryngeal Stenosis for Diagnosis.*

A man aged sixty-one, having contracted syphilis ten years before, rapidly became aphonic, without fever, pain, or cough. Some days later the larynx was infiltrated and reddened on its right side, there was no ulceration, but an abundant secretion of muco-pus. Varied treatment, including mercury and iodides, had no appreciable effect.

A year after the onset the patient had intense dyspnoea which necessitated tracheotomy. Both vocal cords were much infiltrated and red, and the left half of the larynx was swollen and tender; under the influence of rest and moist applications the acute symptoms subsided, but two months later a chill brought on new troubles. The patient complained of dysphagia, abundant salivation, and dull pain in the larynx, which had swollen on the right side. The whole larynx had been invaded as far as the ary-epiglottic folds by red granulation-tissue. No glands could be felt in the neck.

DR. VAN SWIETEN (Brussels) : *Extraction of a Foreign Body from the Bronchus by Tracheotomy.*

Called in haste to a little girl, aged eleven, who had swallowed a little ball with a wooden whistle attached, the author found her breathing easily, speaking with a natural voice, and without discomfort or pain. At the moment of the accident she appeared to

be choking. The larynx and trachea seemed clear on examination, and radioscopy gave no indication. Suddenly the child became cyanosed again, and the author rapidly performed a low tracheotomy. On the reappearance of the symptoms of asphyxia the cannula was withdrawn and the author stimulated the tracheal mucous membrane, setting up a fit of coughing which brought up the foreign body into view. It was immediately removed with forceps.

The trachea was sutured in its lower part, but as there was some subcutaneous emphysema, the cannula was replaced for forty-eight hours. The child quickly recovered.

Chichele Nourse.

(To be continued.)

Abstracts.

FAUCES.

Jacobi, A. (New York).—*The Tonsil as a Portal of Microbic and Toxic Invasion.* "Arch. of Pediat.," July, 1906.

Jacobi discusses the anatomy and function of the faucial tonsils and their connection with the lymphatic glands. He considers that a surface lesion must always be supposed to exist when a living germ or a toxin is to find access, and even that when tonsils, or what is more common, a single follicle, becomes inflamed, the very venous obstruction will exert the bactericidal influence of the stagnating blood-serum.

The lymph-vessels from the mucous membrane lie immediately beneath the surface epithelium, and are mostly developed in the pharyngo-laryngeal grooves and on the posterior wall of the larynx (not on the vocal cords, hence the absence of constitutional symptoms in purely laryngeal diphtheria). On the level of the palatine tonsil—*i. e.* not on the tonsil itself—they are usually rich and their walls very thin.

There are three collecting trunks—upper, middle, and lower. The second comes, not so much from the tonsil as from the adjacent parts; it goes to the glands just below the posterior half of the digastric muscle. Retterer in 1886 made the important statement, based on silver nitrate injections, that the lymphatic network occupies the whole follicular mass of the tonsils, and constitutes in these organs a system of closed canals, which *do not open into* the connective reticulum either by open stomata or by extensive outrunners. Finally, Jacobi quotes Bacon Wood on the lymphatic drainage of the tonsil, whose claim for a tonsillar gland (under the sterno-mastoid, just where it is crossed by the digastric muscle) he questions. Jacobi enumerates the facts to be considered in his subject, and thinks that an invasion into the normal tonsil is possible. Laboratory injections being made under pressure prove nothing.

Macleod Yearsley.

NOSE.

Baumgarten, Egmont (Budapest).—*Acute Affections of the Eyes following Acute Nasal Disease.* "Monatsschrift für Ohrenheilkunde," May, 1906.

The author draws attention to the intimate relationship which exists between many affections of the eye or orbit and the condition of the nasal cavities. Hitherto these have been studied chiefly in chronic cases, usually when a bone-necrosis in the nose or accessory sinus disease has given rise to some lesion in the orbit. The relationship can, however, be best observed in acute cases; these generally, however, apply to an oculist for relief, and the nasal condition may escape observation. The following cases have occurred in the writer's practice:

Unilateral Protrusion of the Eyeball, with Œdema on both sides, following a Serous Ethmoiditis.

The patient, a girl aged eight, two or three days after an attack of influenza developed severe œdema of the left eye, with protrusion of the eyeball, followed two days later by œdema of the right eye. When seen on the seventh day the patient was unable to open the left eye and could scarcely move the eyeball, which was much protruded. The upper lid of the right eye was moderately œdematous. On examination of the nasal cavities the only abnormality found was an enlargement of the anterior end of the left middle turbinal. The enlarged part was removed and was found to be swollen and spongy; from the wound a copious serous exudation escaped, the tension of the swelling of the left eyelids was immediately lessened, and in two days the œdema of both eyes had disappeared. As the protrusion of the left eye remained a week later, the middle ethmoidal cells were removed with Grünwald's forceps and an opening made into the posterior group. There was again a free escape of serous discharge, and twenty-four hours afterwards the protrusion had entirely disappeared. The author thinks that in this case the ethmoiditis produced a disturbance in the orbital circulation and consequent engorgement of the veins. It is possible, he thinks, that some of the right ethmoidal cells were also involved, and the swelling of the right upper lid was thus accounted for.

Œdema of the Eye associated with Ulceration of the Nasal Septum.

Two cases are described, in both of which there were specific ulcers on the upper part of the septum, with severe œdema of the corresponding eye. After energetic treatment of the ulcer in each case for a few days the œdema entirely disappeared.

Paralysis of the Internal Rectus and the Inferior Oblique associated with Sphenoidal Sinusitis.

The patient was a woman, aged thirty. She complained of defective vision and diplopia on the right side. The muscles mentioned were paralysed. During a thorough examination of the nose, on probing the anterior wall of the sphenoidal sinus the bone was felt to be soft and thin at one point, and with a slight pressure the wall was perforated; there was an immediate discharge of blood-stained fluid, and at the same moment the patient exclaimed that she could now see perfectly. The cure remained permanent. In this case there was probably retention of

the secretions in the sinus, which caused great pressure on the sinus wall; this pressure, acting on the back of the orbit, had paralysed the muscles (probably by pressure on the inferior division of the third nerve at or near the sphenoidal fissure.—K. R.).

Orbital and Supra-orbital Neuralgia caused by a Purulent Inflammation of the Bulla Ethmoidalis.

The neuralgia was immediately and permanently relieved when free drainage of the purulent collection was provided for.

Protrusion of the Eyeball associated with a Serous Sphenoidal Sinusitis.

The patient, a girl aged eighteen, had severe protrusion of the left eye, which was otherwise normal. With the exception of some chronic hypertrophic catarrh, nothing abnormal could be seen in the nose. The ostium of the sphenoidal sinus could not be seen, and, as in the former case, a sound was pushed through the anterior wall into the sinus. A copious discharge of blood and blood-stained fluid escaped and the protrusion of the eye became less marked at once; two days later it was quite unnoticeable.

In all these cases the author claims that the ocular symptoms were entirely dependent on a nasal lesion, as is proved by their immediate disappearance when the nasal condition had been treated.

Knowles Renshaw.

EAR.

Valentin (Berne).—*On Hæmatoma of the Right Ear in Swiss wrestlers.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

The right ear is pressed forcibly against the opponent's chest during this form of struggle, and a hæmatoma is consequently frequent. Incision relieves the pain, but does not prevent the shrinking. The author therefore recommends, in recent cases, aspiration of the contents and subsequent massage. Rest and time are also desirable, but they are not readily accepted by the wrestlers.

Dundas Grant.

Henrici (Aix-la-Chapelle).—*Further Observations on Tuberculosis of the Mastoid in Childhood.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

As the result of investigation of eight cases of tuberculosis of the mastoid in children, the author comes to the following conclusions:

(1) That mastoid tuberculosis in children is a comparatively frequent disease, about one fifth of all cases of mastoiditis in children being tuberculous.

(2) Tuberculous mastoiditis in children is in most cases primarily an osseal disease—that is to say, induced through the circulation.

(3) This primary osseal tuberculosis is more frequent than the secondary form which results from tuberculosis of the tympanum.

(4) This mastoid tuberculosis is in many cases purely local and comparatively benign; it is very amenable to treatment, and if operation is carried out in good time the prospects of recovery are great.

(5) In the operation it is generally possible to remove all the disease by means of simple chiselling of the bones of the mastoid; it is only in a few cases that it is necessary to clear out the tympanum as in the radical mastoid operation.

(6) Certain diagnosis of the presence of tubercle can only rarely be determined by the naked eye, but mainly by microscopical examination. Experiment on animals does not give such a certain result as the microscope.

(7) Facial paralysis is relatively rare in tuberculous mastoiditis in children, and when it is present it points to an advanced process in the bone.

(8) Tuberculosis of the pharyngeal tonsil has no marked significance in the retention of such mastoid tuberculosis. *Dundas Grant.*

Wittmaack (Greifswald).—*On the Histo-pathological Examination of the Organ of Hearing, with a Special Reference to the Administration of Fat and Myelin Substances.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

The methods of staining various sections for a general view of fat medullary sheaths and nerve-cells respectively are described.

Dundas Grant.

Neumann, H. (Vienna).—*Antrotomy and Radical Operations under Local Anæsthesia.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

Only those cases are suitable in which there is no sub-periosteal abscess and in patients who are not too nervous. Local anæsthesia is strongly indicated in all cases with advanced pulmonary tuberculosis, acute affections of the lungs, diabetes, nephritis, and severe uncompensated lesions—in short, in all cases where there is a contra-indication for general anæsthesia. It is recommended that the patient should take a good meal before the operation. Five injections are made, of which three are in the mastoid region and two in the groove of attachment of the auricle, so that they can reach the posterior wall of the meatus. For the radical operation, in addition to the injections above enumerated, four further ones are made into the four walls of the meatus. *Dundas Grant.*

Heine, B. (Berlin).—*Isoform in the After-Treatment of the Radical Operation.* "Zeit. für Ohrenheilkunde," Band li, No. 2.

This is found to keep the formation of granulations in check, to diminish the secretion, and more or less to prevent its conversion into pus, thereby favouring epidermisation. It must not be used in strong solution, as it would prevent the formation of granulations altogether, owing to its strong corrosive action. Heine uses ordinarily the 3 per cent. gauze. For the first dressing iodoform gauze is used, and it is only when the bone is completely, or nearly completely, covered with granulations that isoform gauze is employed in its stead. The dressing is changed daily; it may be left for two days, but not longer. Isoform is found to act as an antiseptic against the pyocyanus. It cannot take the place of iodoform altogether, and in point of fact in the after-treatment of simple chiselling of the bone in acute suppurations it is not to be used, as its tendency to restrain the formation of granulations is too great. *Dundas Grant.*

Blake, C. J. (Boston).—*Therapeutic Effect of Sound-Waves, or Mechano-Therapeutics of the Ear.* "Boston Medical and Surgical Journal," July 12, 1906.

The object of this paper is to show "that the application to the organ

of hearing of that mode of motion which it is especially constructed to transmit and to perceive comes, justifiably, under the head of mechanotherapeutics, and that this claim is demonstrably determinable, in the sound-transmitting apparatus, and inferentially determinable, in the perceptive organ." The author, further, thinks it desirable to draw a contrast between the grosser modes of motion, of frequent clinical use, and the lesser degrees of motion, obtainable through the medium of sound-waves, which are more appportionate to the delicacy of the sound-transmitting apparatus.

As a matter of fact sound-waves applied therapeutically are merely a form of acoustic message, and consequently require to be adopted in force and form.

Sound-waves as an adjunct to treatment are useful in two groups of cases: (1) conditions presenting more or less immobility of the sound-transmitting apparatus, (2) such conditions as decrease the power of perception. After discussing the treatment of secondary contraction of the tensor tympani by such means as the use at night of a cotton and wax plug (method of Politzer), Blake gives directions for the application of sound-waves. He suggests the human voice as most convenient, concentrated upon the ear through a speaking-tube, one or more feet long, and two inches in diameter. This tube should have its lumen partially closed midway by a ball of loosely rolled wool (which serves to decrease the resonance of the tube in its reinforcement of the sharp, upper partials of the voice). The tube should be applied directly to the ear, its other end nearly closed by the mouth of the speaker, who should speak in a moderate tone.

In higher grades of fixation it is better to use non-sonorous motion for major movements for mobilisation. In connection therewith Blake cites the changes in the drumhead in "boiler-makers' deafness" as an instance of Nature's efforts to safeguard a deeper seated and more vulnerable part. He also describes the effect of subjecting cases with normal hearing to sustained tones of undoubtedly high pitch.

He discusses briefly the force value of speech, and states that, in cases of extreme immobility of the sound-transmitting apparatus the daily use of the voice through the tube, beginning with monosyllabic words compounded of consonant sounds of high logographic value, has led, gradually, to the perception of the softer consonant sounds and, finally, to that of the continuous sentence.

In monaural deafness the daily use of this method of "voice massage" is recommended, and in cases of deaf-mutism with a remnant of sound-perception the similar application of the voice is beneficial.

In conclusion, the author points out that sound-waves as a form of massage can be applied commensurably proportionate to the delicacy of the sound-transmitting structures of the middle ear and labyrinth; that the prolonged use of tones of excessive amplitude and very low or very high pitch has a prejudicial effect on the perceptive apparatus; that mechanical reproductions of speech are open to the objection of accentuation of overtones; and that the natural voice, concentrated upon the ear, is the safest and best form of sound source for the phono-massage of the ear.

Macleod Yearsley.

REVIEW.

Die Nebenhöhlen der Nase. By Professor Dr. A. ÓNODI. 124 plates. Vienna, 1905: Alfred Hölder, 1, Rotenturmstrasse 13.

The book consists of an excellent series of 124 plates representing views of the nasal cavities and their accessory sinuses studied from all directions and taken from the dead subject. The letterpress accompanies each plate and gives to the reader a concise and accurate description of the parts exposed by dissection.

The amount of original work that this series of dissections has entailed must be enormous and can only be realised by those engaged in the investigation of the subject.

The treatment of diseases of the accessory sinuses by surgical means has received considerable attention within recent years, and Professor Ónodi must be warmly congratulated on the publication of a work which will be of inestimable value to all seeking information in this special department of practice.

Where all the plates are so admirable it is, perhaps, unnecessary to draw any special distinction, but Plate 5, showing a sagittal section through the infundibulum as it opens into the middle meatus, together with the frontal, the ethmoidal, and the sphenoidal cells exposed, is the first to strike the reader's notice. Plates 6 and 7, showing a cannula *in situ* in the sphenoidal and frontal sinuses respectively are also most instructive, and the same may be said of every plate throughout the book.

A series of X-ray photographs occupy the end of the work and show the position of the sound in catheterisation of the frontal sinus. A further series of plates explicitly demonstrate the various steps in operating on the frontal and maxillary sinuses for empyemata of those cavities, as well as those necessary for the removal and rectification of spurs and deflection of the nasal septum. This work can be strongly recommended as one of exceptional merit.

BOOKS RECEIVED.

Tommaso Manciola, M.D. *Malattie dell' orecchio del naso e della gola* (Oto-rino-laringojatria). Con 98 incisioni. Ulrico Hoepli, Editore Libraio della Real Casa. Milano.

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. lxxxix. London: Longmans, Green & Co. 1906.

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THE
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**ADDRESS ON SOME PRACTICAL PROBLEMS IN OTOTOLOGY
AND RHINOLOGY.¹**

BY DUNDAS GRANT (LONDON).

MR. PRESIDENT AND GENTLEMEN,—I should be proud to place before you a piece of original investigation containing some epochal addition to the sum of human knowledge, or at least of that section of it with which we are particularly occupied. Such, however, I am unable to do, as from circumstance, and perhaps from temperament, I have been led to enrol myself as a simple healer of the sick and to study my subjects in those most interesting of documents—my fellow-creatures. My inquiries have always been conducted in the light of these practical pursuits, and if there is one thing on which I think I may congratulate myself more than another it is the possession of a frame of mind which enables me to extract the greatest amount of benefit (duly acknowledged) from the work of others, instead of racking my brains to find means of criticising and depreciating it. How often have I seen the critical frame of mind deprive its possessor of much of the good he might otherwise have derived!

My initiation into otology dates from thirty years ago, when my valued friend and relative Mr. Laidlaw Purves indoctrinated me in the practice and principles of the specialty and inspired in me an interest in this branch of the medical art which I venture

¹ Read before the American Academy of Ophthalmology and Oto-Rhinology, at Oaklands, St. Clair, near Detroit, U.S.A., August 31, 1906.

to think I still retain and hope never to lose. As the successor to Hinton in the great school of Guy's Hospital he maintained the best traditions of British otology as established by Toynbee, enhanced by a familiarity with the advances in the art as developed and practised in Continental schools, notably in Vienna, where Gruber and Politzer were the chief exponents. Gruber is now no more, but Politzer, in spite of the length of his active career, is still as receptive and appreciative of new ideas as ever, and bids fair to continue long an example of industry and enthusiasm which we may well emulate and strive to imitate.

At that time the ear was mainly studied in relation to its main function—that of hearing—and the surgical developments of otology with which we are now so familiar were scarcely dreamt of. I cannot help thinking that the progress in this direction has dazzled the otological eye by its brilliancy and has diverted from the less sensational problems of what I may call acoustic otology the attention they have deserved. It cannot be said that in this department the progress has been at all in proportion to that in the surgical.

Far be it from me, however, to say that we have remained at the stage where cases which failed to respond to the syringe or to the air-donche were considered hopeless, but the advance beyond it has not been so considerable as could be wished.

PROBLEMS IN REGARD TO THE DIAGNOSIS OF DISEASES OF THE EAR AS AN ORGAN OF HEARING.

At the commencement of the period I have mentioned the functional examination of the ear was by no means neglected. Tuning-fork tests were studied by Lucae, Schwabach, and other otologists, and Hartmann devised his well-known conventional graphic representations; but I think it will be generally agreed that the fullest development was only attained by the laborious investigations of Professor Bezold of Munich, for the results of which he is entitled to our warmest gratitude. Ostmann and Gradenigo have been among the other most diligent developers of this method of testing, at great expense of time and labour. Possibly there has been a tendency to over-estimate the value of these tests, especially when we consider their subjective nature and the "personal equation" of such untrained observers as the patients on whose statements we have to depend. On the other hand, it is surprising to read the statement by the surgeon in

charge of the aural department of a metropolitan medical school that he has quite given up tuning-fork tests. Jacobson, late of Berlin, now, unfortunately, deceased, has certainly exposed them to the most destructive criticism, but he has in the description of his practice shown himself unable to dispense with them. As usual, the truth lies in the middle and we must realise the limitations of the tuning-fork tests, not reject them. Care must be taken both in observation and interpretation.

In the first instance, we must only accept results which are well marked. Bing suggests that no difference of less than two seconds from normal duration should receive consideration. This applies especially to the measurement of hearing by bone-conduction. Again, it is well to repeat the tests several times, exercising considerable scepticism if they vary to any great extent.

Forks of very high or very low pitch are ill-adapted for tests connected with bone-conduction. Very high-pitched forks are apt to be heard by the opposite ear by air-conduction, in spite of our closing it up, thus rendering the testing of the ear under investigation very unreliable. For Weber's vertex test they are, therefore, ineligible. Low-pitched forks are of such weight and magnitude that the patient may *feel* the mechanical vibrations after he ceases to hear the sonorous ones and thereby be led into error in reporting. The ideal fork for bone-conduction in general, and especially for such tests as Rinne's and Weber's, is Gardiner Browne's, tuned to c^1 with 256 vibrations per second. It should be heard by a young adult for about fifteen seconds through the bone and for about a further fifteen opposite the meatus. This "aero-osseal difference" is an important item which should not be omitted in the description of a tuning-fork. The duration should be long enough to allow of a good margin for observation, and it should not be so long as to induce phenomena of exhaustion in a normal person.

In regard to "Rinne's test," I consider its evidence, especially when positive, as invaluable, but would remind you of an obvious fallacy into which I and many others have been led by it, and which in many text-books receives no notice. This is that in unilateral nerve-deafness we get a "negative Rinne," because we are comparing the air-conduction of the diseased side with the bone-conduction of the sound one, the vibrations of the tuning-fork on the mastoid being conveyed through the cranial bones to the opposite ear. Here we have to check our results by means of the vertex test and the Galton whistle in a way I need not here recount.

For the production of pure tones we have no more convenient instrument than the tuning-fork, and in some form or other the graphic method of recording the field of audition, for which we are primarily indebted to Hartmann, will never be dismissed from employment even though submitted to modification in some directions. Probably it will advisably be confined to air-conduction, and the number of octaves may, by the use of nine instead of five tuning-forks, be increased to eight with advantage. The amount of time required may be considered sufficient to render it impracticable for general use, but this pales into insignificance beside Professor Bezold's monumental "continuierliche Tonreihe." I may

FIG. 1.

	c^a 16	c^b 32	c^c 64	c^d 128	c^e 256	c^f 512	c^g 1024	c^h 2048	c^i 4096
100	1	1	1	2	5	2	1		
90	2	2	2	3	1	10	5	2	
80	3	3	3	5	7	15	7	3	
70	4	4	4	7	2	20	10	4	1
60	5	5	5	10	3	25	12	5	
50	6	6	6	12	4	30	15	6	
40	7	7	7	15	5	40	20	8	2
30	8	8	8	17	6	50	25	10	
20	9	9	9	20	7	60	30	12	3
10	10	10	10	22	8	70	35	14	
0	11	11	11	25	9	80	40	16	4
	12	12	12	27	10	90	45	18	
	13	13	13	30	11	100	50	20	
	14	14	14	32		105	55	22	
	15	15	15	35			60	25	
	16	16	16	37			65	27	
	17	17	17	40			70	30	
	18	18	18	42			75	32	
	19	19	19	45			80	35	
	20	20	20	47			85	37	
	21	21	21				90	40	
	22	22	22				95	42	
	23	23	23				100	45	
	24	24	24				105	47	
	25	25	25						

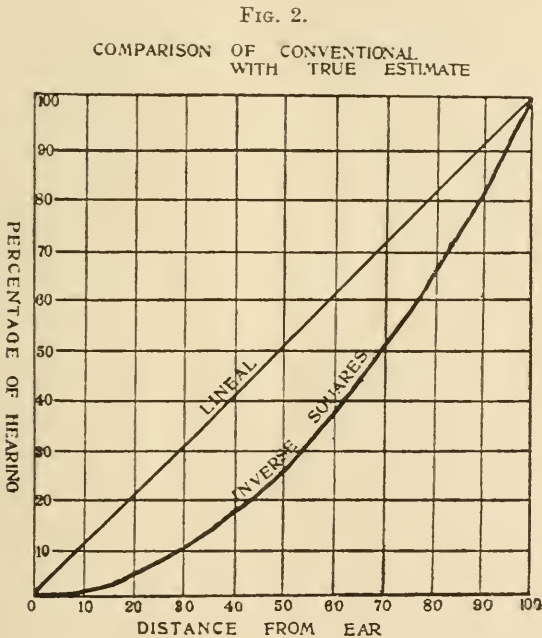
Dundas Grant's duration chart.

remind you that to facilitate calculation and to save time I have devised an *expeditious method by which the percentage duration of hearing for nine forks* can, in many cases be taken for both ears in about twenty minutes, not merely by the aurist, but by any assistant possessed of normal hearing and conscientiousness.

A blank chart is employed consisting of vertical columns, one for each tuning-fork. These are divided from above downwards into equal parts corresponding to the numbers of seconds the given fork is heard by the normal person. The observer notes by means of a stop-watch the number of seconds he hears the fork after the patient ceases to hear it and draws a horizontal line through this number in the vertical column. The percentage of duration of

hearing is indicated by the figures in the margin on the left side of the chart (Fig. 1).¹

To convert the percentage of duration of hearing into percentage of actual hearing power is a problem which is certainly of great interest and probably of great practical value. Undoubtedly as a step in the direction of scientific righteousness it merits our careful attention. In the mere testing with the watch, the voice, or other *sound of constant intensity at different distances*, we ought, if we are to be accurate in our measurement of the patient's acuity of hearing, to allow for the fact that sound diminishes as the square of the distance.



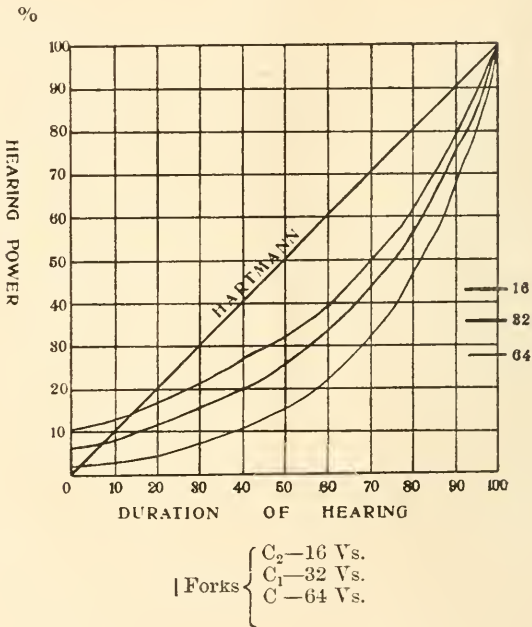
The above curve shows the amount of theoretical error into which we fall when we leave this rule out of account. Thus, if a watch, audible to the normal ear at a distance of 100 units, is only heard by the patient at 50, the amount of hearing power is not 50, but about 25 per cent. (Fig. 2).

The test, however, is so much affected by reflection from the walls of the room that it is impossible to carry it out with mathematical exactitude, and the simplicity of the ordinary lineal measurements commends itself as a rough test of the patient's progress or the reverse rather than as a quantitative estimation of the hearing power.

¹ *Brit. Med. Journ.*, 1898, vol. ii, p. 1239.

To grasp and apply this comparatively simple rule would disconcert many of us ; how much greater is the difficulty in calculating the percentages of hearing by the tuning-fork when we remember that the tone dies away by logarithmic decrements with a factor peculiar to each individual tuning-fork! Bezold, by adopting a rule of Edelman's, assuming that the decrement of all tuning-forks was the same, calculated out a very near approximation to the desired result. Schmiegelow adopted the method of measuring the distance at which the fork under investigation was heard at the end of the different periods of duration. Ostmann's method is in a

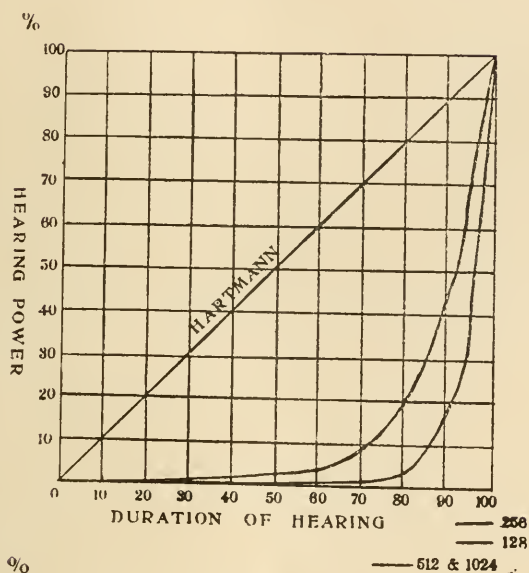
FIG. 3.



way an extension of Gradenigo's, being founded on the principle that the visible and calculable amplitude of vibration is an index of the intensity of the sound. Gradenigo makes them exactly proportional, but in reality the intensity varies as the square of the amplitude. My friend Dr. Womack investigated for me the set of forks I use, employing the microscopical method for finding the constant factor peculiar to each of the lower forks and the distance method for the higher ones.

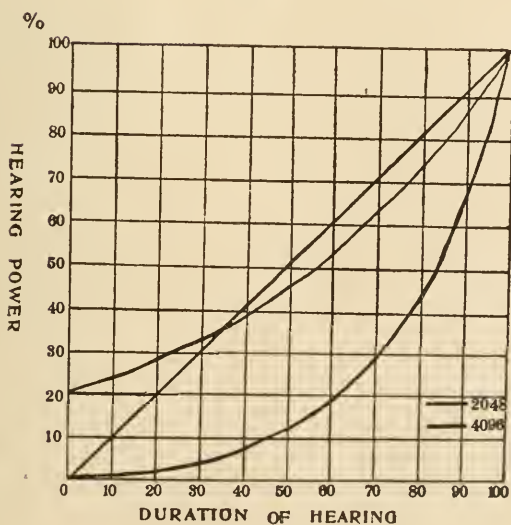
The appended tables show for several of the forks the *relation borne by the percentage duration to the percentage auditory acuity* (Figs. 3, 4, 5).

FIG. 4.



Forks { C — 128 Vs.
 C¹ — 256 Vs.
 C² — 512 Vs.
 C³ — 1024 Vs.

FIG. 5.



Forks { C⁴ — 2048 Vs.
 C⁵ — 4096 Vs.

It will be seen that 50 per cent. of duration in case of a tuning-fork of medium pitch is equivalent to only about 15 per cent. of normal auditory power.

The percentage duration is in most cases much greater than the percentage of true hearing power, and a chart similar to Hartmann's, corrected by Dr. Womack, as below, gives a much nearer approximation to the reality (Fig. 6). (The discrepancy in the case of the lowest fork C_2 is, pending further experimental revision, to be neglected.)

The duration charts have often given inordinately high readings for the middle forks (such as C^1 256 vibrations), but these are

FIG. 6.

	C_2	C_1	C	c	c^1	c^2	c^3	c^4	c^5
100	1	1	1						
90	2							1	
80	3	2	2		1				
70	4	3		1					1
60	5	3	3					2	
50	6	4	4		2	1	1	3	2
40	7	5	5	2					
30	8	6	6		3			4	
20	9	7	7	3	4	2	2	5	3
10	10	8	8	4				6	4
0		9	9	5	6	3	3	7	5
		10	10	6	7	4	4	8	
				7	8	5	5	9	
								10	

Dundas Grant's duration chart corrected to give percentage of true hearing power.

reduced to more reasonable and more accurate proportions in the corrected charts.

How far this correction of the charts with which we have so long been familiar will lead us to greater accuracy in diagnosis is quite uncertain, and for the present Hartmann's claim to our gratitude is certainly indisputable.

In regard to *lengthened bone-conduction*, may I state a conviction that this is produced by increased tension in the conducting apparatus, not by simple obstruction, as is shown by its being practically absent in cases of uncomplicated ceruminous occlusion.

We will all admit, no doubt, that in the *combinations of affections of the nervous and conducting apparatus* the shortening of bone-conduction due to the former may neutralise the lengthen-

ing due to the latter. The degree of loss of air-conduction and the alteration of the aero-osseal difference (negative Rinne) may here enable us to check results. As a rough rule, I think that in pure "obstructive" deafness the amount of loss of air-conduction should be about equal to that of the increase in bone-conduction.

I think I have said enough to show that the results of our tuning-fork tests must not be blindly accepted, but must be interpreted in the light of their limitations. Moreover, we must take them in combination with other signs. We must not rely on them alone any more than we would rely on any other single method of examination of any organ of the body.

DIAGNOSTIC VALUE OF TESTS FOR HIGHEST-PITCHED TONES.

It is pretty generally accepted that loss of hearing for the highest-pitched tones is characteristic of, and, indeed, almost pathognomonic of, disease of the labyrinth—we may almost say of the lowest turns of the cochlea. The tympanic apparatus is mainly required for the conduction of the comparatively slow vibrations of the lower-pitched tones, and in spite of it being diseased or at least fixed, the highest-pitched tones are heard. If, with evidence of disease of the conducting apparatus, the hearing for the highest-pitched tones is defective or lost, we assume that there is simultaneous labyrinthine disease.

If our tests exclude disease of the conducting apparatus any deafness present must be attributed to disease of the auditory nerve in its labyrinthine expansion, its trunk, its cortical centre, or the fibres of communication between the nerve and this centre. If the deafness is, under these circumstances, most marked for the highest tones the affection is most probably situated in the cochlea. Should, however, the defect of hearing be equally or more pronounced for deep tones, the portion of the auditory nervous apparatus is more probably some part other than the labyrinth, possibly the cortical centre.

What is the foundation for this view?

Gradenigo,¹ in Schwartz's handbook, asserts it as well established by his experiments and observations, and Politzer² quotes Gradenigo directly. The typical defect for high tones is shown in most of our charts of hereditary syphilitic disease known usually

¹ *Handbuch der Ohrenheilk.*, vol. ii, p. 394.

² *Lehrbuch*, 1901, p. 588.

to affect the labyrinth. On the other hand, in Siebenmann's¹ case of central disturbance of hearing depending upon a lesion of the crural tegmentum, the perception of the lower tones was the first affected, later the perception of all tones being equally diminished. In Gradenigo's² cases of lesion of the auditory nerve-trunk the tones in the middle of the range were the worst heard.

I have ventured to lean on these results and to assume as a practical rule that in cases of nerve-deafness in which the defect is not most pronounced for the highest-pitched tones, but for all tones in pretty equal proportion and perhaps even more for the lower tones, the affection is probably one of the auditory centre rather than the labyrinth or nerve-trunk. If, further, there is no evidence of an organic lesion of the other cranial nerves or central nervous system, there is a reasonable probability that the affection is a functional one and the prognosis is *ceteris paribus* more favourable. I have applied this principle in numerous instances, as in neomartial and tobacco forms of nerve-deafness. Two most striking cases, one of hysterical deafness, and one of neurasthenic dullness of hearing, I published in the JOURNAL OF LARYNGOL., RHINOL., AND OTOL.³ In the former, the hearing, which suddenly returned, was so genuinely extinguished that the patient spontaneously acquired the art of lip-reading. In the latter a little more generosity in diet, stimulants, and rest and greater economy of labour and of conscientiousness resulted in recovery.

THE ACTION OF QUININE ON THE AUDITORY NERVE.

The more the nature of the changes produced by quinine in the internal ear is investigated, whether from experimental or clinical research, the more complicated the question becomes. Kirchner's⁴ somewhat crude experiments seemed to have proved that there was congestion with effusion of blood in various portions of the labyrinth. It was later elicited that in each case the animal's death was accompanied by convulsions, and it was shown by Grunert⁵ that in animals killed in such a way as to produce convulsions but without any administration of quinine, similar disturbances were produced in the labyrinth, though possibly in a less degree.

¹ *Arch. of Otology*, vol. xxvi, p. 346.

² Schwartze's *Handbuch*, vol. ii, p. 513.

³ Vol. XIII, p. 281, and Vol. XVII, p. 234.

⁴ *Monats. für Ohrenheilk.*, 1883, No. 5.

⁵ *Arch. für Ohrenheilk.*, vol. xlv, p. 161.

Wittmaack's¹ experiments showed that changes were brought about in the auditory cells and in the auditory nerve of such a nature that Nissl's bodies became more highly stained and ultimately disappeared, a phenomenon seen in toxic degeneration of other parts of the nervous system. This very objective observation indicated that quinine acted as a specific poison, but left unanswered the question as to whether congestion or anæmia was produced.

In favour of the anæmia theory was the analogy with the quinine amblyopia cited by Brunner.² This is accompanied by an unmistakable anæmia of the retina, and the citer argued by analogy that the same condition must be present in the labyrinth. It cannot be said that his contention has been altogether disproved, and some competent observers are of the same way of thinking. The majority are, however, apparently inclined to believe in the existence of a congestive condition. Roosa³ reports the actual occurrence of visible congestion of the tympanic membrane as the result of the administration of quinine. Blake⁴ warns against its administration in cases of inflammatory congestion of the ear (though it must be admitted that the ultra-conservative or antiparacentesis school, headed by Zaufal and Piff,⁵ give salicylic compounds with a view to cutting short an acute otitis media). Numerous writers accept without question the view that these drugs cause congestion of the labyrinth, and I myself am of this opinion, as the result of inference from general clinical observation, such as the beneficial effect of bromides, and also from finding the tinnitus produced by quinine quieted by compression of the vertebral arteries.⁶ This has the effect of diminishing the blood-pressure in the basilar artery, its branches, the internal auditories, and, thereby, in the vessels off the labyrinth. I may remind you that this compression may be made in the suboccipital region, the thumb and finger of one hand being placed in the hollows behind the mastoid processes while counter-pressure is exercised by means of the other hand placed on the forehead. As the arteries lie under the complexus muscle the pressure has to be rather firm. If such pressure checks pulsating noises or vertiginous feeling, the inference is that these are due

¹ Pflüger's *Archiv*, vol. xcv, p. 254.

² *Archives of Otology*.

³ "Diseases of the Ear," 1891, p. 641.

⁴ Reference not found.

⁵ *Verhandl. d. Deutsch. Otol. Gesell.*, 1902, p. 40.

⁶ *Brit. Med. Journ.*, Dec. 24, 1887.

to congestion in regions supplied by the branches of the basilar artery, probably the internal ear.

QUININE IN AURAL VERTIGO.

Allied to the question of the effect of quinine on the hearing-power is its mode of action in cases of aural vertigo. In regard to this it is hardly too much to describe it as specific. One might almost borrow a term from the homeopathist and call it "dynamic." I need not recall to you the history of the matter. It was first supposed that enough had to be given to destroy the functions of the entire internal ear, the vertigo ceasing as soon as the auditory power was extinguished. Needless to say, one hesitated to adopt such a drastic measure, and quinine did not take in the routine treatment of aural vertigo the place which it deserved. With some, it is more habitual to treat "Ménière's disease" with bromide and iodide of potassium. I made an attempt to distinguish "congestive" from "anæmic" forms, giving bromides in the former and quinine in the latter, but found that so far as the vertigo was concerned, quinine was efficacious in both. As regards the dosage, I found large quantities quite unnecessary, and one grain or even the half or quarter of a grain (with or without ten to fifteen minims of dilute hydrobromic acid) was ample. In fact, I ventured the opinion that quinine acted in regard to vertigo neither by causing congestion nor anæmia, but by exercising a direct sedative effect on the vestibular nerve. The recent experiments of Dreyfuss¹ have confirmed this view, and established it on a scientific basis. These experiments were carried out on guinea-pigs by means of the rotating table, and he found out the peculiar attitude adopted by the animal when the rotation reached a certain minimum degree of rapidity. When he rotated animals which had been dosed with quinine, he found the change of attitude much less marked and often scarcely recognisable, the sense of disturbance being obviously dulled by the drug. It seems to me that these results should give us the greatest confidence in the employment of this remedy in aural vertigo, remembering, however, that many other contributory factors in treatment are of undoubted importance. Among others we may note the value of rest in bed, the treatment of the alimentary system, the kidneys, etc.

In cases in which the diagnosis between aural and epileptic

¹ *Compte Rendu du VII^e Congrès International d'Otologie Bordeaux, 1904, p. 93.*

vertigo presents difficulties, which Dr. Risien Russell¹ so well described before the Otological Society of the United Kingdom, I believe we have in quinine a test well worthy of consideration.

A rough rule in regard to the action of drugs in some important types of vertigo is that aural vertigo is benefited by quinine, epileptic by bromides, renal by iodides, and traumatic by small doses of perchloride of mercury. I am assuming for the moment that there is no obvious aural lesion (polypus, cholesteatoma, etc.) which the practical otologist would not overlook, nor the ocular, cerebral, spinal, or migrainous disorders which he ought to keep in mind.

THE VALUE OF INSPIRATION AND SUCTION IN NASAL AND LARYNGEAL THERAPEUTICS.

In a paper by Krebs,² read before the German Otological Society, attention was drawn to an observation of Hueter, a point in the physiology of the respiratory and vascular system, which seems to me of great importance to the rhinologist. It is to the effect that during vigorous inspiration the expansion of the chest must mechanically induce a certain amount of dilatation of the cavities of the heart and great vessels. Insuction of blood is thus produced, and this must, *ceteris paribus*, lead to a diminution of the blood-pressure in the peripheral vessels and, among others, those of the upper respiratory passages. The direction of suction favours the formation of coagulation plugs in vessels which may have been opened, as by operations in the nose.

Patients are, therefore, recommended to avoid snorting out, but, on the contrary, to snuff vigorously up through the nose and spit out by the mouth any blood which has been drawn into the back of the throat. The hæmorrhage after operations for adenoids, for instance, is diminished to an extraordinary degree if these instructions are carefully followed. I may incidentally offer as an argument in favour of the short anæsthesia for these operations that the patient is all the sooner able to perform these voluntary movements.

Another application of inspiratory effort is its use in the emptying of accessory nasal sinuses. Moll,³ of Arnheim, recommended in cases of acute catarrh of the frontal sinuses that the

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xx, p. 413.

² *Verhandl. d. Deutsch. Otol. Gesell.*, 1903, p. 143.

³ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. x, p. 333.

patient should pinch his nostrils and then draw a full breath, thus exercising suction more or less on all the sinuses, but, as a rule, chiefly on the frontal as having the most dependent opening. By changes in posture the various cavities may be put into favourable position as, for instance, the sphenoidal by bending the head downwards and forwards as I have several times observed.

Again, for the irrigation of the nose the process of inspiration¹ may be utilised to great advantage in the following way: A small glass vase has a cork with two tubes one going down to the bottom of the vessel, the other only through the cork. The former has a bulbous orifice at its outer extremity to fit the patient's nose; the other is cut quite short. If the patient snuffs vigorously through the bulbed tube, the liquid from the bottom is drawn up through



FIG. 7.—The inspiratory nasal douche.

the nose and back into the throat, whence it can be spat out. It will be remembered that when air is snuffed up the nose it runs up towards the roof before going backwards, and the same direction seems to be followed in some degree by the fluid, as I have often seen the middle meatus thoroughly cleansed by this method. It has another advantage, namely, that the *vis à fronte* draws it past the Eustachian tubes, so that the risk of infection of the middle ear is reduced to a minimum. The instrument reduced to its simplest form consists of a short tube with a bulbous orifice and a wine-glass.

For the purpose of suction of the nasal sinuses the mechanical arrangement devised by Sondermann¹ is very recommendable. It

¹ *Brit. Med. Journ.*, 1904, vol. i, p. 734.

² *Münch. med. Woch.*, 1905, No. 1, p. 17.

consists of a nose-piece like an anæsthetist's face-piece in miniature provided with pneumatic indiarubber cushions round its margins, so as to fit air-tight. To the front of it is attached a tube and air-ball with valves so arranged as only to allow of exhaustion. The ball is compressed and only allowed to expand when the patient raises the soft palate by the utterance of the sound "ee" or "kee." With a little practice the knack is easily acquired and very marked suction effected. I have observed this in both the frontal and sphenoidal sinuses. The relief afforded in a chronic frontal catarrh

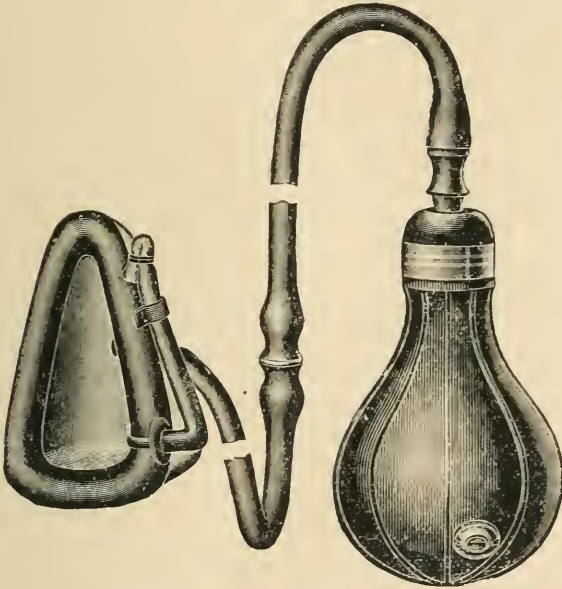


FIG. 8.—Sondermann's nasal suction apparatus.

in the person of the wife of a Canadian medical friend was most striking.

Inspiration may be practised for the benefit of the larynx, and those who have not introduced Leduc's¹ tube for the inhalation of powders into the larynx into their practice would do well to give it favourable consideration. It consists of a glass tube of about ten inches in length, one end of which is pushed to the back of the patient's throat, while the other is placed in a small saucer containing the powder to be inhaled. The end in the throat is curved downwards for about half an inch through an angle of 100°. The opposite end is bent down for three inches so as to dip conveniently

¹ *Gaz. Méd. de Nantes*, Nov. 16, 1901.

in the powder. The lips are compressed firmly round the tube, and if a sharp sucking inspiration is made, a quantity of powder is drawn into the larynx. This can be done by the patient, who has thus placed in his hands the means of anæsthetising a tuberculous larynx and of rendering the swallowing of nourishment possible in cases in which it would otherwise not have been so.

Among the most useful powders are di-iodoform, as an antiseptic; orthoform, as a local anæsthetic in ulceration; anæsthesin, similarly a local anæsthetic and antiseptic. It is useful, also, when there is no ulceration and tends to reduce œdema. Its anæsthetic action is, in my experience, shorter than that of orthoform. A

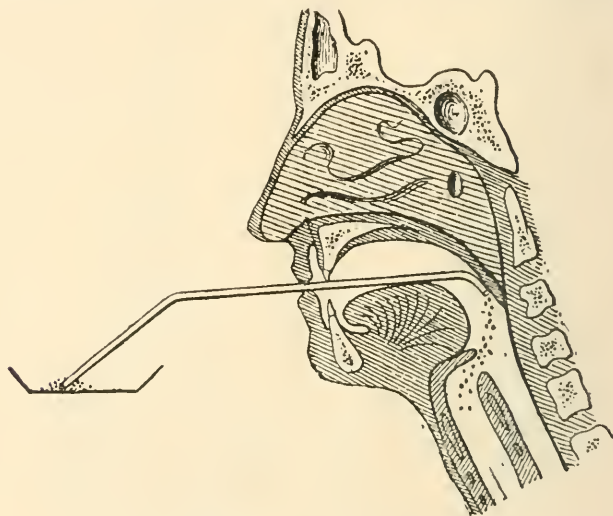


FIG. 9.—Leduc's laryngeal powder inhaler.

combination of two parts of orthoform with one of resorcin acts as an excellent anæsthetic and antiseptic.

There is no doubt that in persons with weak and dilatable hearts the inspiratory efforts I have described should only be practised with the greatest discretion, and in some cases should be avoided altogether. Incidentally I cannot help thinking that the violent inspirations through the nose which are such a feature of some courses of physical instruction may lead to cardiac dilatation, more especially in the presence of nasal or naso-pharyngeal obstruction.

THE VALUE OF INTRA-NASAL TREATMENT IN SPASMODIC ASTHMA.

Extraordinary divergences of opinion have been expressed with regard to the influence of intra-nasal disease in the production of

spasmodic asthma. I need not go over the whole history, with which you are, no doubt, familiar. My views were stated in my address as President of the Hunterian Society of London in 1900.¹ I then expressed myself to the effect that asthma is a disease in the treatment of which general medicine owes much to the specialist, and every practitioner in diseases of the nose must have before his mind cases in which the treatment of the nasal cavity has resulted in long and even permanent relief from the suffering depending upon this disease. "At the present time," I went on to say, "physicians make a rational search for nasal symptoms, and when such are present or suspected then only are the patients brought before the notice of the rhinologist, and under such circumstances the percentage of beneficial results is by no means a contemptible one."

It would, indeed, be strange if the important experimental proofs of the interaction between the nerves of the nasal mucous membrane and those of the bronchial muscle, brought forward by Brødle and Dixon, were not confirmed by clinical experience. No doubt the exaggerated hopes raised by Hack and his followers and the natural disappointments that ensued were calculated to bring the nasal theory and the practice founded on it into discredit. The harm done thereby was small, however, compared with the result of leaving the nasal condition alone. I remember well the case of a medical man who, on account of asthma, had been obliged to give up his practice near London and retire, at great loss, to a town on the south coast. He had acted on the advice of a physician who had actually not even examined his nose. At a later period, too late for the mischief done to be repaired, his nose was found to be perfectly packed with polypi, which must have been already present, though no doubt in a lesser degree, when the asthma had established itself. Mr. Mayo Collier narrates another case in which the same spirit of scepticism had prevailed. On the other hand, all must have seen, as I have done, occasional cure and frequent relief following the removal of nasal sources of irritation. I have observed at least two cases in which the attacks were checked by a nasal spray of mucin, as devised by Mr. Stuart-Low. The immense vogue obtained by the advertised nasal spray "cures," which appear to contain chiefly cocaine, adrenalin, and atropin, shows how beneficial nasal treatment can be.

In order to check my impression by the results of a small series of consecutive and unselected cases, I wrote to eleven patients and

¹ *Brit. Med. Journ.*, April 27, 1901.

found that three of them were cured, three much improved, four relieved for a time, and one not relieved at the time but who recovered subsequently. These do not include others before and after, among which I could easily quote some of my most satisfactory results. This is very much what one would have expected, and I think it sufficient to justify my opinion, but in reality among the failures there were certainly some who did not give the treatment a fair trial. One, for instance, was an alien lady who, for reasons of economy, chose to be treated in the hospital, but being quite unsuitable for charitable treatment, withdrew herself from the institution and from my care, to the detriment of the result. In another instance the irritation caused by the operation induced a temporary aggravation of the asthma (a clear proof of the causal nexus), and the recovery which followed took place in other hands and was attributed, I am informed, to the administration of small doses of arsenic. Again, from one cause or another, intra-nasal operations are sometimes, as such, unsuccessful in my hands; though possibly other and more skilful or less experienced nasal surgeons can boast of having no failure, I cannot.

It must be admitted that in the practice of a physician who is not identified with the treatment of the nose the percentage of cases in whom there is no nasal disease is probably much higher than in mine. We cannot, however, overlook the remarkable results published by Francis as obtained by him by canterisation of the septum in cases of asthma without nasal complications.

SCLEROSIS OF THE MIDDLE EAR.

One of the most distressing problems is the nature, cause, and, if possible, the cure of those insidious progressive and incurable forms of deafness, without visible change in the tympanic membrane and without narrowing of the Eustachian tube. I need hardly say that I refer to what is now known as sclerosis of the middle ear, otosclerosis, ankylosis of the stapes, chronic labyrinthine capsulitis.

It has taken long for this condition to have its proper place in our otological nosology, many of the cases formerly described as nerve-deafness being doubtless examples of this disease, and many cases described as sclerosis being really chronic tympano-Eustachian catarrhs. The introduction of methodical tuning-fork tests corrected the former error to a considerable extent, the latter one

being apparently still current, if we may judge by the descriptions of stenosis of the Eustachian tube and thickenings of the tympanic membrane in the accounts of cases put forward as instances of sclerosis. There may, no doubt, have been in these cases an ankylosis of the stapes, but in any event they were certainly not cases of pure sclerosis as we now understand. In Professor Politzer's second last edition of his great text-book cases of sclerosis were included in the account of chronic catarrhal adhesive processes, although among the drawings of his pathological sections were beautiful specimens of the disease in question. In his latest edition (1901) it need scarcely be said that the condition receives ample individualisation and is most clearly named and described. Panse, Stern, Katz, Siebenmann, and others, have added important contributions to our knowledge, and Denker's monograph¹ gives a complete study of all the original work on the subject. Recently (May 7, 1906) it was discussed by the Otological Society of the United Kingdom, Dr. Albert Gray² adducing reasons for thinking that the osteitis and osteoporosis, now recognised as the main morbid anatomical condition, was attributable to a slowing or feebleness of the circulation. This view was corroborated by my own and others' observation of its occurrence in young anæmic women and also by the familiar fact of its frequent inception after childbirth. What the exact pathogenesis of it may be seems still obscure, and of course the *post-mortem* examinations are few in number and do not afford much guide as to the early stages. It is interesting to note the observations of Ducrest³ and Moreau⁴ to which Professor Kolisko first drew my attention. They found small osteophytic plates on the inner surface of the skulls of women who had died in childbed, though it must be admitted this suggests nothing more definite than a tendency to osteoid changes in association with parturition. The part played by parturition in exciting osteomalacia is perhaps more suggestive still, though it cannot be said that the osteoporosis of otosclerosis presents much in common with the limelessness of the bones in the other disease. Possibly more numerous sections may throw greater light on this obscure matter. I think it probable that it will be found to arise from various causes. Among others I am disposed to give a prominent place to that strange disease, chronic osteo-arthritis deformans. In

¹ *Die Otosclerose*, Wiesbaden, 1904.

² *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xxi, p. 256.

³ *Mém. de la Société Méd. d'Observ.*, Paris, 1844.

⁴ *Bull. Soc. Anat. de Paris*, 1844.

many of my cases of sclerosis I have found evidence of actual arthritis or of its early symptoms, with frequently a history of its existence in the family, especially in the mother. Again, in the examination of some cases of osteo-arthritis, I have found, with even quite slight disturbance of hearing, a negative Rinne, but without indrawing of the membrane, narrowing of the Eustachian tube, or improvement on inflation. In such cases the remedy most likely to be beneficial is the carbonate of guaiacol.

Siebenmann has initiated a plan of treatment by means of phosphorus, and anything advanced with the weight of his opinion deserves our very highest consideration. I confess, however, a difficulty in following the arguments in favour of this recommendation. It is founded on the observations originally made by Wegner¹ and confirmed by Miwa and Stoetsner, that in young animals the administration of phosphorus modifies the bones in such a way that where spongy tissue should be formed in the growing bone dense solid tissue takes its place, which, examined by the naked eye and microscope, is found to consist of well-formed bone. With these results before us I fail to see *à priori* the advisability of administering a drug whose action seems to be to cause solidification of spongy bone, thereby rendering it all the more dense. Possibly there is some flaw in my reasoning, and I am most open to conviction if I am in error. Meanwhile Professor Siebenmann states that in about 50 per cent. of the cases treated with phosphorus the result as regards cessation of falling off of hearing power was very satisfactory. These statements must be accepted as unquestionable, but we are free to consider whether the cessation was a result or simply a coincidence.

This brings us to the very important question of prognosis, in regard to which all who have had much experience know the necessity of caution. We were formerly led to believe that these cases went of necessity from bad to worse, till the patients became "stone-deaf," and we accordingly told them so and said we could do nothing for them. I cannot say there is very much more we can do for them, but we have seen so many cases who, years later, were no worse and, if anything, a little better, that we are justified in most instances in reassuring them that there is, at all events, no certainty of their getting entirely deaf or even worse than they are beyond the natural changes incident to advancing age. In short, although we cannot offer any hopes of recovery, we need not give a prognosis of despair.

¹ *Jahrb. f. Kinderheilk.*, vol. xlvii, p. 173.

There can be no doubt as to the influence of childbirth in originating or increasing otosclerosis, but whether we are justified in prohibiting marriage or in advising the extrusion of the fertilised ovum in the subjects of this disease is a very anxious question. Marriage is not always followed by childbirth, and childbirth is not always followed by increase of otosclerotic deafness, so that on the whole, in view of the uncertainties of result on the one hand and the sociological advantages of wedlock on the other, we are only justified in giving warning as to possibilities—not in uttering a prohibitive prognosis. One of my earliest patients with sclerosis of considerable severity eventually married, and instead of getting worse as the result of two childbirths, got, on the contrary, rather better. If marriage in any given case is likely to bring increase of happiness and comfort, and to lead to the realisation of legitimate aspirations, the result is calculated to be beneficial.

THE INFLUENCE OF NASAL OBSTRUCTION ON THE MIDDLE EAR.

A question in regard to which it seems too much argumentation has been practised is whether nasal obstruction, as such, can cause or keep up catarrhal conditions of the middle ear. The practical question was as to the utility, or even the justifiability, of operations for the removal of nasal obstructions on account of the persistence of aural catarrh in general obstructive deafness.

That the influence of such obstruction has been immensely over-rated I am perfectly convinced, but that in a certain proportion of cases it has a direct influence I am equally certain. Naturally it is difficult to appraise its value in a large number of cases because the patients complain of the deafness, and we adopt other methods of treatment over and above the removal of nasal obstruction. It is, therefore, only in rare cases, such as one in which I removed a septal obstruction on account of mouth-breathing and pharyngitis in a singer, who made no complaint of dulness of hearing, but who afterwards stated that the ear on the same side as the obstruction, which had been his "deaf ear," ceased to be deaf when the obstruction was removed.

I think it will be admitted that if the changes in the middle ear are such as may be produced by non-ventilation of the tympanum, nasal obstruction may be included as a *particeps criminis*, and its removal may be considered as indispensable or at all events justifiable.

The best available evidence that non-ventilation is a causal factor in the aural disturbance is the occurrence of improvement in the hearing after inflation. This view was indicated by Dr. MacBride in a letter on the subject to the *British Medical Journal*,¹ and it is one with which I venture to think most of us will agree, as also with the converse that in cases in which no improvement follows, and especially if there is at the same time free entrance of air on inflation, the ear is not at all likely to be benefited by the removal of a nasal obstruction.

Perhaps it might be stated that in cases of pure nerve deafness nasal operation is all the more contra-indicated. Here is a rule which seems absolute, but I can quote a case in which the removal of adenoids led to the complete recovery of hearing in the daughter of a medical friend, whose nerve-tone and general health appeared to be impaired by the presence of the adenoids, but who suffered from nerve-deafness and not obstruction. This, however, is the exception, and the rule remains.

In judging as to the importance of nasal spurs, we may be very much misled if we are guided merely by inspection. We must remember that the majority of so-called "spurs" run obliquely upwards and backwards and, therefore, in the direction of the current of inspired air. What, therefore, may to our eye look like a very formidable obstruction may be in reality nothing of the kind, and, therefore, in no need of removal.

The debates in our British societies seem to have interested, and almost amused, one of our German *confrères*, Dr. Röpke, of Solingen, who, in connection with his studies on the injuries of the nose and its accessory cavities, investigated the question of the influence of nasal obstruction on the ear.² He found that in the large majority of cases the hearing-power was lower on the side on which the nose was obstructed. If there was lowered hearing power on both sides it was almost invariably the ear of the side on which the nose was obstructed, which was the worse. A further outcome of the investigations was that the hearing (still in the majority of cases) was improved, or even became normal, within a few weeks after operative correction of the nasal obstruction without catheterisation or any other therapeutical measures being adopted for the middle ear. He attributed the aural trouble rather to the stagnation of the secretions behind the obstruction and to their being driven up the Eustachian tubes than to the

¹ Dec. 14, 1901, pp. 1780, 1781.

² "Die Verletzungen der Nase," etc., Wiesbaden, 1905, p. 39.

comparative negative pressure on which others have laid considerable weight, and which I also think is not without some influence.¹

We have, therefore, to decide whether the apparent obstruction is acting in reality as such, and also whether the hearing is improved by ventilation of the tympanum.

EUSTACHIAN CATHETERISATION IN PRESENCE OF NASAL OBSTRUCTION.

I formerly found many cases in which the presence of a septal spur or deflection interfered with the passage of the Eustachian catheter as usually practised, and I have seen some in which practitioners of experience had pronounced the passage of the instrument as impracticable. One enthusiastic nasal operator glibly suggested that in such circumstances the obstruction should be removed.

By considering, however, the fact I have just recalled, that spurs generally run upwards and backwards, I hit upon the idea of introducing the catheter with the concavity upwards, the point lying on the floor of the nose under the anterior part of the spur. It will be readily seen that the farther the point advances inwards the more vertical room there will be for it under the spur, and thus placed it will get freer instead of more jammed as it would be if the ordinary position were adopted. I published this in detail in the *British Medical Journal* for September 28, 1901,² having found it then as now of the greatest value in what seemed impossible cases. In the first stage the tip of the nose has to be tilted well up, the shank of the catheter to stick up in the air, and the beak has to lie on the floor of the nose like the head of a golf-club on the turf. I have, therefore, ventured to christen it the "golf-club" method. My friend Dr. Zarniko, of Hamburg, has independently arrived at the same idea (a very natural one to a rhinologist) and published it in the second edition (1905) of his work on the diseases of the nose.³ As he states that he has seen it nowhere precisely described I am sure my publication of it has not come under his notice.

¹ It may be asked whether the "negative" pressure occurring during inspiration is not exactly counterbalanced and neutralised by the "positive" pressure produced by expiration. Probably it is in many instances, but any expansion of the erectile tissues of the turbinals, or, still more, any insuction of the *alæ nasi* during inspiration, would exaggerate the inspiratory negative pressure out of proportion to the opposite effect of expiration.

² *Brit. Med. Journ.*, September 28, 1901, p. 890.

³ "Krankheiten der Nase," etc., Berlin, 1905, p. 285.

IMPORTANCE OF SOME OF THE SMALLER TECHNICAL DETAILS.

I wish in the first place to state my conviction that many patients whom I have failed to benefit have received benefit from colleagues into whose hands they have subsequently passed, owing to my having failed to carry out some small technical detail as thoroughly as I might have done. The converse also is true, and among the details which have been apparently imperfectly carried out have been the tightening of the relaxed membrane, the full and complete use of the Eustachian catheter and bougie, and the application of the cotton-wool drum.

In some cases the patient has assured me that instruments (catheters) had been passed up the nose, but that the ear had never before been so freely opened. What I have said with regard to the difficulty occasioned by a septal spur explains some of these incidents. I would also attach importance to use of the intratympanic gum-elastic catheter of Weber-Liel. The fact of it being *in situ* in the Eustachian tube can be settled so decidedly by auscultation during inflation, that it can be used with a degree of confidence that the solid bougie does not give. In most cases, however, the fine transparent celluloid bougie serves our purpose, and I am indebted to Thost for an addition to its effect, namely practising vibration while it is *in situ*, as devised by Ernst Urbantschitsch. The vibration is effected by any of the ordinary mechanical external vibrators applied on the ear, on the mastoid or, as I find best, over the Eustachian tube on a pad of folded linen between the lower jaw and sterno-mastoid muscle. The outer extremity of the bougie should vibrate visibly. Thost's paper appears in the *Festschrift* dedicated to Prof. Lucae.¹

The presence of general or circumscribed relaxation of the membrane is, of course, to be discovered by means of Siegel's suction speculum, which should be in more constant use. The application of contractile collodion is, in my opinion, the best local treatment, and I feel convinced that even after the layer has peeled off the membrane remains somewhat tenser than before.

The artificial drum of cotton-wool, secured by a thread and moistened with paroline, seems not to receive the routine use which it deserves, if I may judge by the cases calling for it which have come under my notice, in which others have not tried it.

LIGATION OF JUGULAR VEIN.

Some observations on the question of ligation of the jugular

¹ Berlin, 1905, published by Sprenger.

vein, which I communicated to the Otological Society of the United Kingdom in June of last year,¹ met with opposition, but they appear to have aroused some thought as to whether this operation ought to be performed as frequently as is done, and whether its effect is as innocuous and beneficial as is generally supposed. I will not trouble you with all the various arguments, but will remind you that the experience of Macewen,² confirmed by Heine,³ Cheatle,⁴ and myself, among others, shows that a large number of recoveries from sinus phlebitis can be brought about by operation on the sinus itself without ligation of the jugular. That Macewen's remarkable series of successes without ligature would be infinitely continued I am not, however, prepared to believe.

In cases of thrombosis in the jugular bulb with pyæmic symptoms, ligation and opening of the jugular is, in my opinion, most formally indicated, as it is also when the trunk of the jugular is obviously the seat of an infected thrombus. There is in most subjects ample means for the establishment of collateral venous circulation, but this affords at the same time free access for the infective materials into the general venous circulation and the lungs. When gradual occlusion by a growing clot takes place the collateral circulation is steadily established, but when a ligature is applied on a non-occluded vein the sudden disturbance of circulation and reversal of current is not so easily disposed of. I, as well as others, have seen proptosis from thrombosis in the cavernous sinus follow the operation, and I have, after death, seen the pus extending down the deep veins of the neck after I had ligatured the jugular and drained it with the utmost thoroughness.

You need not be reminded that about half the cases of cerebellar abscess are associated with lateral sinus phlebitis, and Pritchard has pointed out that in otitic abscesses in the cerebrum and cerebellum the disease can generally be traced along the veins emerging from the part. The lateral veins of the cerebellum, according to Poirer, are directed outwards towards the circumference of the organ and terminate for the most part in the corresponding lateral sinus, the most anterior ones in the superior petrosal. Dr. F. W. Mott, in a private communication, states as follows: "The fact that the lateral veins receive the vein of the nucleus dentatus is,

¹ *Otol. Soc. Trans.*, vol. vi, p. 95; also *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xx, No. 9, p. 453.

² "Pyogenic Diseases of the Brain and Spinal Cord," Glasgow, 1893, p. 331.

³ "Operationen am Ohr.," Berlin, 1904, p. 152.

⁴ *Proc. Otol. Soc.*, *passim*.

in my opinion, of considerable importance in connection with the formation of an internal abscess of the lateral lobe of the cerebellum by a direct extension of an infection of the lymphatics from the lateral veins to the internal structures of the organ. From this it appears that ligation of the internal jugular vein would certainly lead to venous stasis of the whole lateral lobe of the cerebellum of the corresponding side."

In the case of occlusive clot, such as is common in chronic cases, a ligation can do little or no harm, beyond, of course, the damming of the inferior petrosal sinus, but when, as in acute cases, no such occlusion is present, I feel great diffidence in applying one. The opinions of authorities on this subject vary, and although my leaning is in these cases rather against ligation, I am for the present in company with the minority. I beg to refer to my paper in the sixth volume of the *Transactions of the Otological Society* and to ask for an unbiassed and "unheroic" consideration of this problem.

CONCLUDING REMARKS.

I cannot boast of having made any original addition of value to our science, and can merely pose as, at the most, a lucid expositor of elementary otology, but I venture to believe that there have been few items of practical value published in French and German which I have failed to study for the benefit of my students and myself. I am bound to acknowledge, above all, our indebtedness to our German collaborators, whose industrious and enterprising use of their opportunities has so greatly advanced the usefulness and reputation of our art, and to our French fellow-specialists, who have clarified and systematised so much that was obscure and involved. It is to an Anglo-Saxon, however, that all are indebted for the establishment of otology on a sound basis of pathological anatomy, and Toynbee's collection is still an illustration of the remarkable powers of initiative which individuals of our race occasionally display, in spite of the absence of any present aid or immediate hope of reward. May we hope that in the friendly rivalry among the nations, others, like Toynbee, may help us to attain for Anglo-Saxon otology the position we would desire for it. We may be proud, however, of the British and American otologists whose names are associated with pioneer work to which all foreign authors give the amplest acknowledgment.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE BELGIAN SOCIETY OF
OTOLOGY, LARYNGOLOGY, AND RHINOLOGY.

The Annual Meeting held at Brussels, on June 9 and 10, 1906.

President: DR. J. LECOCQ.

(Continued from page 399.)

Dr. MOURE (Bordeaux) : *Suppurative Phlebitis of the Sinuses.*

Amongst 750 cases of otorrhœa treated by the radical operation the author met with fifteen cases of suppurative phlebitis, of which seven were fatal. The right side was affected twelve times. In two cases there was not the least rise of temperature, and in another case the abscess of the sinus discharged into the tympanic cavity. Contrary to what is remarked by nearly all writers, the author has never met with suppurative sinusitis without marked pulsations of the sinus wall. As to treatment, the author approves of free drainage, but he never ligatures the jugular.

Dr. CAPART remarked that the greater frequency of thrombophlebitis on the right side was accounted for by anatomical facts.

Dr. BROECKAERT (Ghent) : *The Normal and Pathologic Inclusion of Soft and of Hard Paraffin in the Tissues.* Demonstration of Microscopic Sections.

The author showed that after a variable time vaseline and soft paraffin are absorbed and replaced by connective tissue. If the substitution is gradual the result is good, but if irritation is produced, the reaction becomes too great and pseudo-tumours are produced, simulating fibro-sarcoma or even tuberculoma. Solid paraffin appears to escape absorption.

Dr. BROECKAERT : *The Etiology of Ozæna* (with Demonstration of Microscopic Sections).

The author has been led to consider ozæna as a special chronic inflammation of the pituitary membrane, particularly of the inferior turbinals, ending at length in diffuse sclerosis of the mucous membrane. The most important alterations are the horny degeneration of the superficial layers of the epithelium, and degenerative changes in the glands. In consequence of the changes in the vessels nutritive troubles take place, which affect the mucous membrane, the bone, and the periosteum. The lesions are less marked

in the ethmoid, which becomes affected with atrophy in advanced cases.

Histologically, the mucosa affected with ozaena shows that there is a chronic toxic infection. Although, in the author's view, neither syphilis nor tubercle can be considered as direct causative factors, he thinks that parasyphilis and paratuberculosis may produce the disease when certain predisposing causes exist, such as platyrrhinia. This theory would explain why so many ozenatous patients become tuberculous.

Dr. MAHU (Paris): *The Efficiency of Treatment of Tertiary Syphilis of the Nose by Iodides.*

A paper upon the use of potassium iodide in tertiary affections of the nose, and the need of giving it at once in large doses.

Dr. TEXIER (Nantes): *The Symptoms and Diagnosis of Caseous Maxillary Sinusitis.*

Observations based upon a study of the published cases, of personal experience, and of some cases communicated by Dr. Moure.

Caseous rhinitis appears in two forms, of which one is slight and comparable to chronic maxillary sinusitis of dental or nasal origin, the other a severe form, having the characters of a malignant growth, or of tertiary syphilis of the sinus.

Whilst the mild form can be cured by irrigations, the severe type demands rapid and energetic treatment to check the formation of nasal cholesteatoma, which produces deformity of the nasal fossæ, and causes fistulæ in the walls of the sinus.

The author noted three cases of this serious form. It is characterised by the disgusting odour of the secretions, the presence of caseous matter in the nasal fossæ, and, especially, by a very marked opacity of the sinus on transillumination. The treatment should consist of irrigations, and in certain cases the radical operation is indicated.

Dr. BOULAY (Paris) agreed with the author. All cases of caseous sinusitis are not, in his opinion, benign, and curable by irrigation. He mentioned a case accompanied by fever and grave cerebral symptoms. Septic masses of caseous material were removed by operation from the maxillary sinus and from the ethmoid; the patient was dangerously ill for several days, but eventually recovered.

Dr. ESCAT (Toulouse): *Indications for the Use of the Galvano-cautery in the Various Forms of Laryngeal Tuberculosis, and its value.*

Dr. HENNEBERT (Brussels): *A Contribution to the Clinical Study of "Labyrinthism" in the course of Acute and Chronic Purulent Otitis.*

The author includes under the term labyrinthism not only Ménière's triad, and other associated symptoms, such as nausea, vomiting and nystagmus, but also another series which must be looked for systematically, such as oto-ocular reflexes and qualitative and quantitative modifications in the sense of hearing.

In the course of acute otitis labyrinthism may render the diagnosis uncertain between simple labyrinthine irritation, true labyrinthitis, and commencing meningitis. Labyrinthine symptoms may appear in the course of chronic otitis either spontaneously, or during some therapeutical manipulation. They generally yield to rarefaction of the air by Delstanche's apparatus.

Dr. BECO (Liège): *Naso-pharyngeal Polypus. Extirpation; Death by Collapse.*

A boy aged fifteen and a half years, shown to the Society in 1904 and 1905, had a sessile tumour occupying the left side of the nasopharynx and blocking the left nostril. All attempts at removal by the natural passages failed. Numerous séances of electrolysis caused diminution of the tumour at the point of application, but growth went on at the periphery. There was exophthalmos and deformity of the corresponding half of the face.

A radical operation was performed. The route by the maxillary sinus was followed at first, but it proved insufficient; the superior maxilla was then resected. The tumour, which was fixed to nearly the whole surface of the cavum, was very difficult to remove. No unusual incidents took place during the operation; death occurred from collapse some hours afterwards.

Dr. J. MERCKX (Brussels): *Meningitis following Removal of a Polypus from the Middle Turbinal.*

A middle-aged female patient, affected for a great number of years with ethmoiditis and double frontal sinusitis, had already undergone a series of operations for nasal polypi. She complained of a persistent headache, which had become very severe for some weeks, and occasional attacks of fever.

The only operation consisted in removing a polypoid mass from the head of the right middle turbinal by means of Grünwald's for-

ceps. The polypus removed was the size of a small bean, and was inserted upon the turbinal bone. The patient was hæmophilic, and it was necessary to plug.

When the patient returned the following day to have the tampon removed, she showed no particular symptoms, but in the course of the day she vomited two or three times. The third day there was a temperature of 39° C., without quickening of the pulse, accompanied by intense occipital headache; the pupils were normal and the intelligence unaffected. In the evening the sensorium became obscured, and the patient gradually became collapsed. The pupils were dilated but equal; there were no localising signs.

The fourth day the respiration became difficult and there was pulmonary stasis. The temperature remained high and the pulse was rapid. Death occurred during the night from pulmonary symptoms.

In reply to an inquiry by Dr. Cheval the author said he thought that the patient must have had meningitis for some time. His opinion was based upon the existence of headache, fever, and certain temporary alterations in the habits, character, and temper of the patient which the members of her family had remarked for some weeks before the operation.

Dr. BROECKHAERT: *A Case of Pseudo-leukæmia simulating so-called Mikulicz' Disease.*

The name "Mikulicz' disease" has been given to lymphomatous hypertrophy of the salivary and lacrymal glands. In the present case there were symmetrical tumours of the size of pigeon's eggs at the site of the submaxillary glands, and two pyriform swellings of the sublingual glands. A growth occupied the left half of the hard palate and extended backwards as far as the velum; there was a similar mass, but smaller, on the anterior segment of the velum.

Lenkæmia was excluded by an examination of the blood, but the existence of splenic hypertrophy and a large mass of glands in the mediastinum, visible on the radiographic screen, led to the view that the case was one of pseudo-lenkæmia.

From the point of view of histology, these lymphomatous tumours appear as hypertrophies of pre-existing lymphoid nodules, with multiplication of the lymphoid cells, separating the glandular acini.

Dr. BOUYER (Canterets) : *Hyperæsthesia and Paræsthesia of the Pharynx.*

The author divides cases of paræsthesia into two categories, according as the objective sensitiveness of the pharynx is diminished or increased. From a clinical point of view the subjective symptoms also differ; the hyperæsthetic patient complains of pain, the hypæsthetic rather of difficulty in swallowing and the sensation of a foreign body.

With regard to local therapeutic measures, the difference is important. In hyperæsthesia all topical irritants must be carefully avoided; in hypæsthesia, on the contrary, sedatives are useless, and local stimulants, such as menthol, iodized glycerin, and local electricity, must be employed.

Dr. DELSTANCHE (Brussels) : *The Treatment of Othæmatoma.*

The author recommends compression of the swelling by means of a sheet of gutta-percha, well softened in hot water, which is to be applied to the auricle with a layer of cotton-wool beneath. An elastic band firmly compresses the blood-cyst and fixes the dressing. A perfect cure generally follows in a week.

Dr. TRÉTRÔP : *Sinusitis and Osteomyelitis of the Jaw.*

A patient was operated on by the method of Caldwell-Luc for fungating maxillary sinusitis complicated by infra-orbital phlegmon and purulent otitis media. A month and a half later symptoms appeared of osteomyelitis of the antero-external wall of the maxilla, with fistulæ in the mouth and under the orbit. Rouge's operation was performed, and large fragments of necrosed bone were taken away under cocain anæsthesia. The fistulæ rapidly closed and all discharge ceased; healing took place without any deformity. A second case was that of a female infant aged four weeks, suffering from osteomyelitis of the left superior maxilla with a discharge of pus from the nose. The case was treated by expression, followed by dressings with van Swieten's solution.

The author agreed with Lubet-Barbon and Furet that in operating on these cases it is best to adopt the gingivo-labial route. The fistulæ should first be irrigated with oxygenated water, the walls should then be curetted, and finally sequestra should be removed. When the case makes no progress recourse should be had to semi-decortication of the face.

Dr. VAN DEN WILDENBERG (Antwerp) : *A Case of Latent Thrombosis of the Lateral Sinus.*

A man about twenty years of age, with chronic otorrhœa, had suffered for eight days with violent paroxysms of pain in the corresponding side of the head and neck radiating to the back. There was moderate fever, the pulse was quickened, and the mastoid was tender on pressure. A free mastoid operation gave no relief from the pain; two days later a second operation was performed. The lateral sinus was explored and found thrombosed. The internal jugular was ligatured and the thrombus removed. Lumbar puncture was not used. The patient died of cerebro-spinal meningitis; there was no autopsy. No oscillations of temperature nor rigors occurred during the progress of the case.

Dr. DE PONTIÈRE (Charleroi) : *Pseudo-membranous Rhinitis.*

Nasal obstruction, often unilateral, sometimes comes on with the accompaniments of fever, rheumatic pains, headache and fits of sneezing. On examination of the nasal fossa, the mucosa is seen to be swollen, covered with a reddish exudate, and bathed in mucopus. The naso-pharynx is generally clear; but the choanæ participate in the pseudo-membranous process.

This state only persists some days, until it happens that, either spontaneously or in sneezing or blowing the nose, a mass of blood-stained membrane is expelled, and the patient at the same time experiences a sense of relief. The permeability of the nose is re-established, and after some days the parts become normal. At the moment, the mucosa appears to be superficially ulcerated and a small excess of secretion is formed, but no more false membrane. No Loeffler bacilli either true or false are found in the membrane, but streptococci in profusion, and pneumococci.

CHICHELE NOURSE.

Abstracts.

FAUCES.

Mader, L. (Munich).—*On X-Ray Therapy in the Upper Air Passages.*
"Archiv für Laryngol.," vol. xviii, Part I, 1906.

The author gives a detailed account of the four following cases treated by the X rays:

(1) Carcinoma of the tongue and soft palate, with severe pain not relieved by large doses of morphia, and slight glandular enlargement.

As a result of treatment tongue much lessened in size, ulcer on palate quite healed, and pain much relieved, but disease spread deep into lower pharynx and patient withdrew from further treatment.

(2) Granular pharyngitis with marked neurotic symptoms. Shrinking of "granules" and marked improvement in neurotic symptoms followed on treatment.

(3) Case of chronic pharyngitis with great hyperæmia. After numerous exposures no change was noticed and patient declined further treatment.

(4) Carcinoma of the posterior wall of the pharynx, in the form of a flat growth, about the size of a five-shilling piece. Diagnosis established by microscopic examination. When the case was shown after very numerous exposures extending over nine months, the growth had entirely disappeared from the oro-pharynx, leaving a cicatrix, and in the lower pharynx a mere trace of the growth remained. After a few more weeks of treatment "no trace of the growth will remain." The patient looked in perfect health, and had gained eight pounds in weight during the treatment.

The author gives a detailed description of his pharyngo-laryngeal tube by means of which he is able to bring the rays to act directly upon any part of the upper air passages.

Middlemass Hunt.

Menzel, K. M. (Vienna).—*A Contribution to our Knowledge of Leukæmic Changes in the Mucous Membrane of the Upper Air Passages and the Digestive Tract.* "Archiv für Laryngol.," vol. xviii, Part I, 1906.

A male patient, aged fifty-six when first seen, suffered from chronic lymphatic leukæmia following on pseudo-leukæmia, and was under observation for three years. During all that time there existed a very diffuse infiltration of the whole soft palate, uvula, tonsils, faucial pillars, and base of the tongue. At intervals there occurred attacks of acute inflammation of the infiltrated area, lasting a few days and causing dyspnœa, so as to threaten the life of the patient. During one of these attacks an ulcer formed on the soft palate but healed in a few days. The patient died suddenly with symptoms of acute leukæmia and shortly before death a large gangrenous ulcer appeared in one tonsil. A *post-mortem* examination was not obtained.

The author failed to find any case exactly similar in medical literature, though there are a few resembling it in a series of cases collected by Stoerk under the title "Lympho-sarcoma of the Pharynx and Larynx." Most authors who have recorded any changes in the pharynx in leukæmia have found these changes limited to the adenoid tissues of the tonsils and base of the tongue.

The ulcer which occurred on the soft palate was simple in character and probably traumatic in origin, but the deep ulcer of the tonsil was no doubt a specific leukæmic ulcer, such as often occurs in acute leukæmia.

Middlemass Hunt.

NOSE.

Killian, G.—*Origin of Mucous Polypi of the Choanæ.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," May, 1906.

The author states that these polypi are generally unilateral and single,

markedly pyriform, their large end being situated in the naso-pharynx and their long thin pedicle deeply buried in the nose; the growth is usually cystic, liable to inflammation and gangrene. Rupture of the cysts and spontaneous elimination of the growth have been observed. Recurrence after removal is rare. The difficulty in determining their seat of origin is discussed. The writer has frequently noticed the extraordinary size of the maxillary antral opening accompanying these polypi, which led him to suspect that the pedicles had their origin in the antrum. Close observation of seven cases allowed him to confirm this view. In the writer's opinion these polypi spring from the antral mucosa, make their way through the ostium into the nasal fossa, and pass in the direction of least resistance through the choanæ into the naso-pharynx.

In like manner the sphenoidal and ethmoidal sinuses occasionally contribute to the production of the form of growth.

H. Clayton Fox.

Bellin, L., and Leroux, R.—*Congenital Membranous Occlusion of the Choanæ.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," August, 1905.

On June 12, 1904, a man aged twenty-four was admitted to hospital, complaining of inability to breathe through the nose. Functional examination: Nasal respiration was completely in abeyance with anosmia. Taste normal; dyspnoea was occasionally experienced, attributed to the fatiguing nature of his occupation and forced buccal breathing. The lungs, larynx and heart were normal. Anterior rhinoscopy: On either side of the fore part of the septum vestiges of Jacobson's organ were apparent in the form of oval orifices. The septum was much deviated to the right. A probe introduced along the nasal floor was arrested at the choanæ by membranes of tough consistence. Posterior rhinoscopy: The margins of the choanæ were well defined, but their lumina were closed by rose-grey membranes, directed obliquely downwards and forward; on the left side the occlusion was complete, but on the right there was a small ovoid opening at about its centre. The outer nose was of normal appearance; the dilator muscles were not atrophied and functioned on sniffing. Examination of ears revealed both drumheads slightly atrophied. Hearing for watch, right ear = 28 cm., left ear = 26 cm. Rhinolalia clausa was marked. The superior and inferior maxillæ were somewhat flattened transversely. Palatine arch gothic in type. Upper lip short and sternum retracted at its lower extremity. Thoracic mensuration: Submammary diameter: right = 42 cm., left = 41 cm. Xiphoid diameter: right and left 38.3 cm. On June 24, 1904, Lermoyez operated, making a crucial incision with the galvanocautery in the left choanal membrane; this allowed some nasal respiration. July 6: A large perforation of the deviated portion of the septum was made with cutting forceps, which permitted air to pass from the right fossa through the left choana. In view of the tendency which these perforations have to close the operator elected to remove the posterior part of the vomer and to resect the membranes completely; this was effected by means of a circular motor saw worked from the opening previously made in the septum and Hajek's sphenoidal punch forceps. Tamponing followed. July 18: Patient left the hospital breathing normally. When seen on December 22 nasal respiration was good, olfaction had returned, and the man had gained flesh. Anterior rhinoscopy: The posterior pharyngeal

wall was clearly visible on both sides. Posterior rhinoscopy: Choanæ free. May 15, 1905: Hearing much improved; watch, right ear = 55 cm., left ear = 45 cm. Thoracic mensuration: Submammary diameter: right = 45 cm., left = 44.5 cm. Xiphoid diameter: Right = 42 cm., left 42 cm. In conclusion the writer urges the necessity of removing nasal obstructions, especially when congenital, and remarks on the beneficial results in regard to hearing, return of smell, and conformation of thorax manifested in this case.

H. Clayton Fox.

LARYNX.

Kuttner, A. (Berlin).—*Critical Observations on the Present Position of the "Recurrent" Question.* "Archiv für Laryngol.," vol. xviii, Part I, 1906.

In a very exhaustive paper the author discusses our knowledge of the recurrent nerve, as derived from physiological experiment, pathological anatomy, and clinical observation. He points out that while experiments on animals and pathological examinations have failed to upset Semon's law, clinical observation, after twenty-five years, has discovered one case, that recorded by Saundby in 1903, which is admittedly an exception to that law. But, he asks, is it not a law that the heart lies in the left half of the thorax, because in certain exceptional cases it has been found on the right side? Or is it not a law that in lead palsy the extensors are first, or exclusively, affected, because in rare instances the flexors have been the first to suffer?

Saundby's case has destroyed the last position taken up by Semon's opponents. They said that the clinical picture supposed to indicate a simple abductor paresis was really due to a loss of power in all the muscles supplied by the recurrent, and that the weaker abductors only *appeared* to suffer more than the stronger adductor group. This view is no longer tenable; for in Saundby's case it was the more powerful adductors which were first and most affected, proving that here there must have been a special involvement of the adductor fibres of the nerve and by inference that in all other cases the abductor fibres must have been primarily involved. Saundby's case therefore, though an exception, has established Semon's law. It has proved the existence of a law where his opponents said there was none.

Middlemass Hunt.

EAR.

Bar, Louis.—*Mastoiditis without Otorrhœa; Trepanning; Hearing Recovered; Absolute Cure.* "Annales des Mal. de l'Oreille, du Larynx, du Nez, et du Pharynx," May, 1906.

In 1903 a man had suppurative inflammation of the left ear; he recovered with perfect hearing in a month. In January, 1906, he was seized with slight pain in the left ear lasting two or three days. Absolute deafness immediately ensued, Rinne negative, Weber negative; loss of perception for watch and acoumeter on contact, also for whispered and spoken speech. Examination of the Eustachian tube and drumhead revealed nothing save some opacity of the latter; the meatal lining was not swollen. There was no pain or entotic sound experienced on move-

ment of the pinna, neither was pain induced by pressure over the mastoid. No vertigo. One of the retro-pharyngeal glands was enlarged. The nasal fossæ and pharynx of the corresponding side were hyperæmic. No improvement followed treatment, and towards the end of March the tissues covering the mastoid became suddenly swollen, the tumefaction extending up into the parietal region. The auricle was displaced and the retro-auricular groove obliterated; even now pressure over the mastoid did not induce pain; the trouble seemed glandular in origin. On March 28 paracentesis was performed; no pus present. The retro-auricular swelling went on increasing and fluctuation was present. On April 6 a large subperiosteal mastoid abscess was opened. After clearing away granulations and detritus from the purulent pocket the bone seemed healthy, so much so that the operator hesitated to proceed further. However, after consideration antrotomy was decided upon and carried out. Pus was found immediately under the cortex, and the bone intervening between it and the antrum was in a state of purulent osteitis. All the diseased tissue was removed with the curette, an uneventful course followed, and by the end of May there was a complete cure. Hearing returned, and the drumhead assumed its normal aspect.

In this case the usual symptoms of mastoiditis were absent. The author remarks on the rarity of this form of mastoiditis and discusses the pathology of such cases, quoting Laimé's views as to their etiology. In this particular case he considers a latent mastoiditis was established two years previously during the attack of suppurative otitis above mentioned, and that this suddenly fulminated when the patient below par was subjected to the infection of influenza.

H. Clayton Fox.

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A DISCUSSION ON CONGENITAL STRIDOR (LARYNGEAL AND TRACHEAL).¹

INTRODUCTORY PAPER.

BY A. LOGAN TURNER, M.D. EDIN., F.R.C.S.E., F.R.S.E.,
Assistant Surgeon, Ear and Throat Department, Royal Infirmary, Edinburgh.

IN introducing the discussion upon congenital laryngeal stridor, it is my intention to limit my remarks to a consideration of the different views that have been advanced regarding the etiology of the affection. Before doing so, however, it is very essential that we should have a definite conception of the clinical features presented by a typical case of congenital laryngeal stridor. A perusal of the literature of the subject reveals the fact that there is sometimes a misconception as to what really are the clinical phenomena of this condition, a misconception which must necessarily lead to some confusion in the study of its etiology.

The symptoms have been accurately described by John Thomson. The infant, who appears in other respects normal, is noticed shortly after birth to have noisy breathing. The noise consists of a croaking sound accompanying inspiration, which assumes the character of a high-pitched crow when a more forcible inspiration is taken. Expiration may be accompanied by a short croak when the stridor is loud, but at other times it is noiseless.

¹ Held by the combined Sections of Laryngology and Pædiatrics, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

There are occasionally brief intervals during which no sound is audible even in very severe cases, but with this exception the stridor goes on constantly while the child is awake, and sometimes even when he is asleep. Emotional excitement or any physical cause of deeper breathing, such as exposure to colder air or the act of crying, may intensify the sound. The child's power of crying and coughing is unaffected. A feature of very considerable interest in the case is the fact that although the breathing is noisy, it is not accompanied by the slightest distress, and there is no cyanosis. There is, however, marked inspiratory indrawing of the thoracic and abdominal walls, except in the mildest cases.

The stridor increases in loudness during the first few months, and after remaining about the same for a few months more it gradually lessens and finally disappears during the course of the second year of life.

Various explanations have been offered to account for these clinical phenomena: thus we have a reflex laryngeal irritation induced by the presence of adenoids in the nasopharynx (Robertson, Eustace Smith); pressure upon the trachea from an enlarged thymus (Avellis, Hochsinger); congenital malformation of the upper aperture of the larynx (Lees, Sutherland and Lack, Refslund, Variot, Koplik); an ill co-ordinated spasmodic action of the respiratory muscles inducing an exaggeration of the normal infantile type of larynx, an acquired deformity (Thomson and Logan Turner).

(1) ADENOID VEGETATIONS.

Eustace Smith has ascribed the origin of the condition to the presence of adenoids and the associated naso-pharyngeal catarrh: "I attribute the stridor to a spasmodic contraction of the ary-epiglottic folds and believe that it is due to irritation set up by the adenoids in the naso-pharynx." He points out that while the size of the post-nasal vegetations may be insignificant in any particular case, they may none the less be the cause of the symptoms, as the nervous irritation may be produced not so much by the adenoids themselves as by the associated naso-pharyngeal secretion. To support his contention Smith describes a case in which the symptoms were entirely relieved by the removal of the adenoids. The infant, aged one month, had had noisy breathing since birth, and at times the crowing was so loud and the breathing so laboured and distressed as to raise fears of the child's life. Suffocative

attacks of an alarming nature occurred from time to time, the lividity and distress being so great that immediate tracheotomy appeared imminent. On account of a suffocative attack of exceptional severity the child, at the age of three months, was admitted to hospital. The adenoid vegetations were removed, and in a very short time the noisy breathing ceased and there was no return of the threatened suffocation.

One is at once struck in the description of this case with the fact that the clinical picture differs in one very essential feature from the classical cases of congenital stridor, namely in the occurrence of severe attacks of dyspnoea accompanied with cyanosis, and by the evident distress which the infant at times laboured under. Suffocative attacks of this nature do not occur in congenital stridor. With the exception of one of the fatal cases reported by Sutherland and Lack, we are not aware of any case of congenital stridor being accompanied by serious symptoms of this kind. That adenoid vegetations and their associated catarrh will produce attacks of difficulty in breathing, sometimes of an alarming nature, is quite well known, but such cases, to which that described by Smith corresponds, cannot be classified under the term "congenital laryngeal stridor." Further, adenoids are very rarely met with in cases of congenital stridor, and when they are occasionally present their removal does not influence the character of the breathing.

In none of the cases examined by Sutherland and Lack were the tonsils much enlarged, nor were there adenoid vegetations of any importance. In none of them were the symptoms usually associated with such lymphoid hypertrophy present. Thomson did not find adenoids in his cases. In one of Variot's there was a small mass in the naso-pharynx, but its removal made no difference to the stridor. In regard to only one of the eleven cases published by Massei was the statement made that adenoids were present.

(2) COMPRESSION OF THE TRACHEA BY AN ENLARGED THYMUS GLAND.

In order to estimate what value can be attached to the views of Avellis and Hochsinger as to the origin of congenital stridor from compression of the trachea by the thymus, it is necessary to consider, first, whether the trachea can be compressed by that gland, and, secondly, if such impression can be regarded as the causal factor in the production of this affection.

Both clinical and *post-mortem* evidence certainly appears to

show that an enlarged thymus can compress the trachea and produce respiratory difficulty.

Clinical evidence is to be found in the small number of reported cases in which the respiratory embarrassment has been relieved by an operation upon the thymus. Thus, Theodor, Siegel, Koenig, Perrucker, Moritz-Schmidt, and Morse have reported cases in which the thymus has been exposed and the gland, either in whole or in part, removed or stitched to the periosteum covering the upper end of the sternum. In Theodor's case the operation was performed by Ehrhardt; in Siegel's and Schmidt's cases Rehn was the operator; and in the case reported by Morse the operation was done by Murphy. I have not been able to find the report of more than seven cases operated upon. In six of them the operation proved successful, the difficulty in breathing being relieved. In Morse's case, in which the thymus was stitched, immediate relief was obtained, but the symptoms recurred in a few days, and the child gradually sank and died.

Post-mortem evidence of tracheal compression is also obtainable, but in selecting evidence of this kind I have been careful to cite only those cases in which it was distinctly stated that compression of the trachea was observed after death. This is very necessary, for the reason that there are many cases in which at the autopsy the thymus is described as enlarged, and death is believed to have been due to compression of the trachea without any actual evidence of the same. In Marfan's case the trachea was found almost completely flattened by the hypertrophied thymus; Weigert also succeeded in demonstrating tracheal compression. In Massei's case a similar appearance was observed.

Sufficient evidence in support of the contention that the trachea may be compressed by a hypertrophied thymus has been recorded.

It is now necessary to determine whether such compression can be regarded as the etiological factor in cases of congenital stridor. It is advisable at this point to quote briefly two of the cases of thymus compression, selecting one in which an operation was performed for the relief of the dyspnœa and one in which there was *post-mortem* evidence of compression.

Theodor's case, an example of the first, was that of a child, aged two, strong, pretty well nourished, and with no evidence of rickets. For four months it had suffered from attacks of dyspnœa with cyanosis. The intervals between the attacks became shorter and the dyspnœa increased in severity. It was accompanied by indrawing of the intercostal spaces and suprasternal

notch—the stridor was present in both respiratory acts. Intubation failed to relieve the distress. The thymus was removed by Ehrhardt and there was no further respiratory difficulty. Massei's case was that of an infant four days old. There were sudden and violent attacks of dyspnœa, bordering upon asphyxia; these followed each other at intervals, their duration being about five minutes. Cyanosis, turgescence of the veins of the neck, and great distress were present. Death occurred after three days, and the autopsy revealed a very large thymus compressing the trachea.

It is at once evident that these cases present a very different clinical picture from that which we associate with congenital laryngeal stridor, so that it is difficult to believe that the same causal factor can be present in the two classes of case.

It is necessary, therefore, to analyse the evidence brought forward by Avellis and Hochsinger in support of their contention. The cases described by the former in his paper correspond in every respect to the recognised clinical picture of congenital laryngeal stridor. Avellis argues that the approximation of the aryepiglottic folds in such cases is consequent upon a deeper-lying stenosis, and is comparable to the tucking in of the alæ nasi in cases of nasal or post-nasal obstruction. No clinical or *post-mortem* evidence is advanced by him to support this assumption. In his cases there are no attacks of dyspnœa, no cyanosis, and no real respiratory distress which form so essential a feature of the authentic cases of thymus compression of the trachea. In addition to the greater respiratory distress associated with thymus compression, the stridor is mainly of an expiratory type, and the up and down movements of the larynx are restricted or absent when the trachea is stenosed. In Avelli's cases these features are not present.

Hochsinger, too, is of the opinion that the condition known as congenital stridor is due almost exclusively to compression of the trachea by a hypertrophied thymus, and that the stridor is produced in the trachea. He supports his contention by the aid of two clinical methods—radiography and percussion. Out of fifty-eight infants in whom a radiograph was taken, the thymus was regarded as hypertrophied in twenty-six. In twenty of the latter there were symptoms of congenital stridor. With our knowledge of the great variations both in the size and in the weight of the thymus, and our knowledge of the fact that along with considerable hypertrophy of the gland there may not be the least interference with respiration, it would obviously be injudicious to attach

too much importance to the evidence furnished by the X rays and by percussion.

Further, we have analysed the notes of the ten published fatal cases of congenital stridor, and in only one of them—namely, in Koplik's case—is the thymus stated to be enlarged, and in it there was no evidence of tracheal compression. In five of the cases the gland is described as not being hypertrophied, while in the remaining four no mention is made of its condition. In the four latter it is reasonable to suppose that the gland presented no abnormal appearance. In typical cases of congenital laryngeal stridor, therefore, there is no *post-mortem* evidence that the thymus plays any part in the causation of the stridor. Until more reliable evidence can be brought forward we are unable to accept the view of Avellis and Hochsinger.

(3) CONGENITAL MALFORMATION OF THE UPPER APERTURE OF THE LARYNX.

Sutherland and Lack are of the opinion that congenital laryngeal stridor is dependent upon two factors—namely, a peculiar congenital malformation of the upper aperture of the larynx and the flaccidity of the structures which form that aperture. In six cases in which they made a laryngoscope examination the epiglottis was found sharply folded upon itself, its lateral margins being in close apposition and in some cases in contact. The aryteno-epiglottidean folds were approximated, and thus the upper aperture of the larynx was reduced to a small slit; the thin folds bounding it seemed quite flaccid and flapped to and fro on respiration. In only a few of the cases could a view of the vocal cords be obtained. In one of their fatal cases the epiglottis was soft and folded inwards, but no structural change could be detected in the larynx on microscopic examination. While a certain amount of deformity of the upper aperture is essential for the production of the stridor, the valvular action produced by the flaccidity of the soft parts forming its boundary is also necessary to cause the obstruction.

The stridor is produced by the approximation of the aryepiglottic folds; as the respiratory column of air enters the larynx, the folds, already lying closer to each other than in the normal infantile larynx, become approximated. The fact that they are wider apart at the commencement of respiration and become more closely approximated as the act progresses bears out the observa-

tion that the stridor becomes higher pitched at the end of respiration when the folds are near together. Sutherland and Lack state, further, that as the child grows the malformation remains, but the stridor passes off, because the parts forming the upper laryngeal aperture become less yielding. They found the malformation persisting as long as the cases remained under observation, in one case up to the age of six years. Occasionally a similar malformation is met with in advanced life, but they could bring forward no evidence that such cases had suffered from stridor in infancy.

Other writers have expressed similar opinions with regard to the pathology of congenital stridor. Lees depicts the larynx of an infant aged one, who had suffered from stridor since birth, and died from laryngeal diphtheria. The deformity was of a very marked type. Refslund describes the larynx of an infant aged two and a half months, who had been the subject of persistent crowing from birth. Death occurred from pneumonia, and *post-mortem* examination showed that the upper laryngeal aperture was reduced to a mere slit. Variot's patient was a boy, aged one year and ten months, who commenced to suffer from inspiratory stridor shortly after birth. He died from scarlet fever, and the upper aperture of the larynx showed a lesser degree of the deformity which is figured in Refslund's case. Haushalter has published the history of a child who died at the age of eight months from broncho-pneumonia. Two days after birth inspiratory stridor was noticed. At the autopsy the upper laryngeal aperture was considerably narrowed. The epiglottis was rolled backwards upon itself, its lateral borders being in contact. It presented somewhat the appearance of a funnel, only a small rounded opening being left at the apex of the epiglottis. The aryepiglottic folds were also approximated, and the arytenoid cartilages lay more closely together, so that the interarytenoid fold was effaced.

In Koplik's case, to which reference has already been made, death took place at the age of one from extensive broncho-pneumonia. Symptoms of laryngeal stridor were first noticed three weeks after birth. The upper laryngeal aperture showed a well-marked example of deformity, the epiglottis being curved backwards with its lateral borders almost in contact. The arytenoid cartilages and ary-epiglottic folds were also approximated, the latter being thin and membranous, so that the upper aperture of the larynx was represented by a mere slit.

In all these cases presenting symptoms typical of the clinical picture of congenital laryngeal stridor the appearance of the upper

aperture of the larynx had been ascertained by *post-mortem* examination. Death occurred in the majority from an intercurrent respiratory affection. In all of them a very similar and characteristic malformation, varying only in degree, was observed.

It is regarded by these observers as a congenital malformation. The clinical features present in all of them were typical of the classical picture of congenital stridor. The attacks of dyspnœa and cyanosis, which form so marked a feature in cases of compression by the thymus, were not observed in these cases. In studying the illustrations of the larynx figured in the fatal cases of Lees, Refslund, Haushalter, and Koplik one cannot fail to be struck with the marked deformity of the larynx. It is difficult, indeed, to believe how respiration could have been carried on without any dyspnœa or cyanosis accompanying it. They are drawings, however, and not photographs. In Variot's case, which has been photographed, on the other hand, the deformity is not nearly so marked.

(4) AN ACQUIRED DEFORMITY OF THE UPPER APERTURE OF THE LARYNX, THE RESULT OF A DISTURBANCE OF THE CO-ORDINATION OF THE RESPIRATORY MOVEMENTS.

John Thomson regards the primary element in the causation of congenital laryngeal stridor to be a disturbance of the co-ordination of the respiratory movements, possibly due to some developmental backwardness of the cortical structures which control them. As a result of the ill co-ordinated and spasmodic nature of the breathing a change takes place in the upper aperture of the larynx; there is a constantly recurring sucking in of the soft structures which form the aperture, so that an exaggeration of the normal infantile type results.

The Larynx in the Infant.

In order to make the above statement more clear it is necessary to consider both the type of the larynx and the character of the respiration in infants.

For this purpose Thomson and the writer examined a number of larynges from stillborn infants and from children up to the tenth year of life. Some of them were examined *in situ* by means of a dissection which exposed the larynx from behind, while the remaining larynges were studied after their removal from the body by the usual *post-mortem* method. Our attention was directed

mainly to the upper aperture of the larynx. The structures forming the boundaries of this space—namely, the epiglottis in front, the tips of the arytenoid cartilages, and the interarytenoid fold behind, and the aryepiglottic folds laterally—were found to be much softer and more collapsible than they are in the adult. In addition to the evidence of this, as furnished by the handling of the parts, it was observed that the upper aperture of the larynx of the stillborn infant was relatively wider than that of the infant which had breathed. In the latter the space is narrower from side to side owing to the folding backwards and inwards of the epiglottis, with the consequent drawing together of the aryteno-epiglottidean folds. This is due to the soft, collapsible character of these structures acted upon by the inspiratory air current. The form of aperture thus produced constitutes the infantile type of larynx which has been described by Merkel, Luschka, and other anatomists. As the child grows a change takes place in the form of these parts: the epiglottis becomes more expanded, the aryepiglottic folds are separated, and the upper aperture is in consequence broadened. At the age of three and a half the opening of the larynx is wider, while at nine the infantile type has almost entirely disappeared.

While varieties are met with in different infantile larynges at the same period of life, all of them possess in a more or less marked degree the characteristics above described. These peculiarities combine to make the upper aperture of the larynx liable to changes in form under the action of influences which have no corresponding effect upon the adult organ. The most important influence of this kind is a sudden drawing of air into the larynx. In the larynges of newborn children and very young infants the effect on the larynx of drawing in air can be easily demonstrated after death by a simple experiment. A bent metal tube is introduced into the trachea, and in order to open up the chink of the glottis a piece of rubber tubing is placed between the vocal cords. forcible inspirations are then made through the tube, when it is found that with each a striking alteration in the form of the upper aperture of the larynx occurs. The exact change varies in different cases, but the following main types may be noted:

(1) In some cases the lateral margins of the aperture become sucked together, so that merely a narrow mesial slit is left between them.

(2) In others the epiglottis is drawn backwards and downwards, so as to act as a lid to the aperture.

(3) In others, again, the arytenoid cartilages meet in the middle line, the margins of the anterior part of the aperture remaining unaffected.

When this experiment is repeated several times upon the same larynx one observes that the upper aperture retains to a very considerable degree the deformity which the suction has produced. Thus, when the aryepiglottic folds are drawn in so that a vertical mesial slit is left between them, they are found after a few experiments to be permanently nearer one another. We were further struck by the fact that in some of the experiments the form assumed by the upper laryngeal aperture closely resembled the deformity which has been figured in the fatal cases described by Refslund, Thomson, and others. In Thomson's case, an infant dying at the age of three months, the epiglottis was folded back in such a way that its lateral margins were in contact, and the aryepiglottic folds approximated so that only a narrow slit was left between them. In other words, the malformation, which has been regarded by some writers as a congenital one, can be acquired by such a simple experiment as that just referred to.

The objection will doubtless be raised that such experiments conducted upon the cadaver cannot be regarded as entirely trustworthy, because the exact conditions which exist during life are not present. We would, however, again emphasise the fact that the aryepiglottic folds, which are mainly concerned in the production of the deformity, contain only a few muscular fibres, and are thin, lax folds of mucous membrane which are readily acted upon by such a mechanical force as the sucking in of air between them. Further, it is well known to all who have attempted to examine during life the larynx of healthy infants and young children that the aryepiglottic folds tend to become approximated when the child forcibly inspires during the examination—that is to say, that the structures can assume in the living body the same position that they can be made to take up in the cadaver and as a result of a similar cause.

Respiration in the Infant.

In very young children the respiration under normal conditions is peculiar in being irregular in rhythm and in force, as if the co-ordination involved in its movements were not as yet under full control. There often occur, therefore, relatively sudden respiratory efforts. When a young baby is excited it is no uncommon thing

for it to develop a temporary crowing noise with inspiration, although it has none at other times. A similar but louder and more persistent crowing, which exactly resembles that in a case of infantile stridor, is not infrequently observed in young infants while they are beginning to come out of chloroform narcosis, and a similar loud crowing is a not uncommon accompaniment of operations on the genital organs owing to the sudden forcible inspiration which the stimulation of the nerves of these parts brings about. Along with the crowing there is always a degree of indrawing of the lower chest wall proportionate to the loudness of the crow.

It is evident, therefore, that in infants in whom the respiratory conditions are normal under ordinary circumstances there may be produced by any cause which will bring about a sudden and increased inspiratory effort a crowing respiration similar to that which is observed in cases of congenital laryngeal stridor. This is due to the soft, collapsible nature of the structures forming the boundaries of the upper aperture of the infantile larynx. In the typical stridor cases, owing to the ill co-ordinated and spasmodic character of the breathing, which forms the primary element of disturbance in these cases, there is also produced a narrowing of the upper laryngeal aperture and a consequent more or less constant condition of stridulous breathing, the same as occurs temporarily in normal children. We believe that the sound is produced mainly at the abnormally approximated aryepiglottic folds. The inspiratory croaking and crowing sounds vary in loudness according to the vigour of the inspiration. It is never constantly present, there being always occasional free intervals.

There appears to be sufficient anatomical, clinical, and experimental evidence, therefore, in favour of the view that an acquired deformity of the upper laryngeal aperture, the result of an ill co-ordinated type of respiration, is probably the cause of the condition known as congenital laryngeal stridor.

INTRODUCTORY PAPER.

By HENRY ASHBY, M.D., F.R.C.P.,
Physician, Manchester Hospital for Children.

The larynx is provided with two physiological stops, one at the entrance, which comes into play during deglutition, and is

affected by the associated actions of the external thyro-arytenoid, transverse arytenoid, and thyro-aryepiglottidean muscles; and the second at the vocal cords. The latter stop serves the double purpose of regulating the passage of air passing to and fro during respiration and also for vocalisation.

The muscles which operate the vocal cords are innervation in co-ordination with the muscles of respiration, both in breathing and vocalisation, including crying; the stop at the vocal cords is readily put into action reflexly during infancy and childhood, and also by motor impulses descending from the higher level centres during an emotion, especially anger. A familiar instance of this is witnessed in the so-called "child crowing" and the "blue fits" or "inspiratory standstill," brought on in neurotic children by suddenly aroused anger. There is a "standstill"—that is, a tonic contraction of one set of muscles and a failure of inhibition of the opposing set.

Under normal circumstances, even in prematurely born infants, the timing of these movements, or, in other words, their co-ordination with the associated movements of deglutition and respiration, is perfect. Moreover, however lax and delicate the epiglottis and its muscular folds may be, they are physiologically fit.

In the class of cases which during infancy are associated with stridulous inspiration there is clearly some form of stenosis at one or other of the stops—namely, at the entrance of the larynx or at the vocal cords.

The commonest form to which the name of congenital stridor is applied is heard soon after birth, and is heard with inspiration; it is usually well marked during the greater part of the first year and gradually disappears during the second. It strangely varies from time to time, almost or entirely disappearing at times, but is always exaggerated when the infant is disturbed or attempts to cry. Any attempt to inspire deeply is accompanied by sucking in of the chest walls and a stridulous, high-pitched crow. Usually there are no attacks of dyspnoea, no holding of the breath, the cry is unaltered, and the infant does not suffer in health. In exceptional cases a difficulty or spluttering in swallowing is associated with congenital stridor. Slow and deliberate swallowing, like easy breathing, is affected without difficulty, but hurried swallowing, as when the infant is thirsty and eager to satisfy its thirst, is accompanied by spluttering. All this may happen without any nasal obstruction whatever.

During the second year the stridor usually disappears, first

entirely disappearing during easy breathing, but reappearing when the child is running about and excited. Bronchial catarrh, in some cases at least, makes the stridor worse and causes it to reappear.

In the following case, which proved fatal from pneumonia, the stridor and stenosis were exceptionally severe.

A female infant was first seen when three weeks old; there was marked stridor of the usual type; it had also an occipital meningocele. The stridor had existed since birth; it took the breast well and appeared to thrive. When five weeks old it was admitted to hospital, as the stridor seemed worse. There was clearly a stenosis, which varied from time to time, but was always worse when the infant was undressed for examination. At times at night, when asleep, the stridor was very marked. Later there was some bronchial catarrh and a temporary stopping of respiration, with cyanosis. Tracheotomy was performed one night, as the distress was great, with complete relief to the breathing. Death occurred a few days after at nine weeks of age. At the necropsy it was noted there were no adenoid overgrowths, no enlargement of the thymus. Double broncho-pneumonia. The larynx, including the epiglottis and cords, were normal. The larynx did not differ in any respect from the larynx of an infant of the same age that did not suffer from stridor. The meningocele was the size of a tangerine orange and communicated by an opening in the lower part of the occipital bone with the membranes at the base of the cerebellum.

It seems clear that in this case the stop was at the vocal cords, the muscles regulating the size of the aperture of the rima glottidis failing to act in co-ordination with the muscles of respiration, so that the aperture was abnormally narrow during the inspiratory act and this was most marked when a deep breath was taken as in crying. What part, if any, the meningocele played in this tragedy seems quite uncertain. Possibly both were the result of developmental anomalies. There was no evidence of any laxity of structure of the epiglottis or its folds or any suggestion that a sucking in of these structures had taken place as in the cases recorded by Lees, Variot, Refslund, and Koplik.

Personally, I am inclined to the belief that in the cases of congenital stridor which I have watched the efficient cause was a neurosis, the result of a disturbed co-ordination, the rima glottidis failing to open its portals sufficiently, especially during a vigorous inspiration. The fact that it varies from time to time, and is associated in some cases with a difficulty of swallowing, seems to me to point more in the direction of a neurosis than to primary failure of development of the structure of the larynx.

There is no doubt that an overgrowth of the pharyngeal tonsil and nasal catarrh is at times present at birth, and will give rise to stridulous and noisy breathing. These troubles cease after suitable treatment; but the cases I have referred to are not in this category.

It is conceivable that an enlarged thymus may press on the trachea and give rise to spasm of the glottis as well as tracheal stenosis, but I have no evidence of this from my own cases. I have seen several cases of tracheal stenosis in infants, which tracheotomy failed to relieve, and at the necropsy a tuberculous abscess involving the lymphatic and thymus, situated in the anterior mediastinum, was found compressing the trachea. My own impression is that an enlarged thymus, or enlarged or caseous lymphatic glands in the mediastinum, does not tend to compress the trachea or bronchi seriously or produce symptoms unless pus forms.

DISCUSSION.

Dr. EDMUND CAUTLEY (London) showed the larynx of a child, aged five months, who had suffered from laryngeal stridor during life, and had died from epidemic diarrhoea. For comparison, he exhibited a normal larynx from a child of the same age and weight. The abnormal larynx showed close approximation of the edges of the epiglottis and of the arytenoid cartilages. During life the stridor persisted to a certain extent during sleep, and in addition the child had occasional attacks of severe stridor and urgent dyspnoea. There were no enlarged post-nasal adenoids and no enlargement of the thymus. Dr. Cautley regarded the persistence of stridor during sleep as an argument against the theory of neurosis. He supported the view that the condition was due to a congenital malformation of the upper laryngeal apparatus, exaggerated by the approximation of the unduly lax tissues during inspiration. Recurrence of the stridor on sudden and deep inspiration in later life suggested that these tissues still remained somewhat lax, although recovery from the stridor had occurred as the result of more complete development.

Dr. A. JACOBI (New York) said a single case, no matter how well observed, should not give rise to the building up of a theory. That was where so many mistakes were made. In a case of stridor the many causes to which Dr. Turner had directed attention should be considered. One form of stridor which he believed had not been mentioned was what he might compare with the purring of a cat, accompanied by very moderate dyspnoea and retraction. Some babies—he had seen a few such—developed and got well after many months. In one an autopsy had been made, and a moderate hypertrophy of the mucous membrane and sub-mucous tissue about the insertion of the arytenoid cartilage had been found, but nothing else.

Dr. D. J. GIBB WISHART (Toronto) had seen some six cases. The last was that of a child less than one day old. The stridor was present even while it slept. Cyanosis set in at intervals if it got upon its back, and relief was obtained by turning it on its side. No adenoids were present, and the other parts were apparently normal, while the epiglottis lay over upon the glottis. The child was doing well without any medicine by simply watching its position. In another child, aged fifteen months, the position of the epiglottis was well seen falling over the glottis and being sucked in with every inspiration. The interior of the larynx could not be inspected. It was examined subsequently under an anæsthetic and

tracheotomy was performed. The parts were found to be normal. The child recovered.

Dr. A. BROWN KELLY (Glasgow) said that the stridor was not due to vibration of the aryepiglottic folds as commonly held, but to vibration of a flap of loose mucous membrane on the summit of each arytenoid. This statement was based on the laryngeal examination of (1) a case of congenital stridor, (2) a child, aged seven years, who had similar croaking inspiration for a period of three weeks, and (3) children during anæsthesia. The stridor and respiratory embarrassment were usually regarded as due to a common cause, but this he questioned. As an exception he reported the case of an infant suffering from congenital stridor in which the entrance to the larynx was normal but for the vibration of the mucous membrane over the arytenoids. With intubation the croaking ceased, but the respiratory difficulty was not relieved. There were no signs in the chest. As the obstruction seemed to be situated in the trachea or bronchi Mr. R. H. Parry removed the upper part of the thymus. The operation had been quite recently performed, so an opinion as to the ultimate result could not be expressed. The impression gained during the operation, however, was that the thymus did not cause the dyspnoea. It might be said that this case was not one of congenital stridor, of which he had had several of the ordinary mild variety. It differed from the typical cases in the degree of expiratory difficulty, but in that only. He had seen two similar cases, both of which died.

Dr. DUNDAS GRANT (London) remarked that these cases came less to throat clinics than to children's hospitals, and that laryngologists saw comparatively few of them. In one of his cases in an infant the stridor was due to a lax epiglottis (as seen by the laryngoscope), and disappeared as soon as the epiglottis was lifted by means of a hook. In another the sides of the vestibule were undoubtedly sucked in. He attributed the symptom to abnormal developmental laxity of the parts.

Dr. A. JACOBI (New York) took it that such cases as developed after months were mostly embryonal and congenital. To that class belonged tumours and congenital mobility of the tongue which might result in what had been called "swallowing the tongue." This might lead to sudden death after having given rise to occasional attacks of temporary stridor and dyspnoea.

Dr. E. FLETCHER INGALS (Chicago) had happened to see several of these cases, and in one was fortunate enough to get a good laryngoscopic examination. In that case the walls of the opening of the larynx were constantly sucked in with inspiration, and he came to the conclusion that this resulted from inco-ordination of the muscles—in other words, that it was a neurosis; he made no research to establish that theory. Recently, however, after removing a papilloma from the larynx of a child two or three years of age by means of Killian's tubular laryngoscope, he was obliged to do a tracheotomy suddenly because of swelling of the larynx. On examination afterwards, while breathing was carried out through the tracheotomy tube, he found the walls of the larynx were constantly sucked together in inspiration, so that it was impossible to see the inner surface of the larynx unless the bronchoscope were crowded in to open the organ. This child had no laryngeal stridor, and the larynx was normal, excepting the presence of the papillary growth.

Dr. HUDSON MAKUEN (Philadelphia) had been impressed with the fact that they knew so little about the symptom laryngeal stridor. The difficulties of arriving at the exact physiology of the condition that

caused the symptom were very great, because they could not see the entire larynx during the stridor. There must, however, be present at least one of two conditions: (1) a faulty development of the cartilaginous portion of the larynx, and (2) an insufficiency of the muscles whose function it was to hold the larynx open during inhalation. As to etiology, the condition was analogous to asthma, and there might exist any one of many causes.

Dr. G. A. SUTHERLAND (London) said that this affection was a distinct clinical entity regarding the diagnosis and treatment of which all were agreed. The only difference of opinion was as to the pathology. That a malformation was present in the larynx was admitted, but some held with Drs. Thomson and Logan Turner that this was secondary, while others held that it was primary and congenital. In supporting the latter view he referred to the absence of any other evidence in support of the neurosis theory, to the continuous nature and persistence of the stridor, and to the fact that the breathing in every other way was normal. On the other hand, the presence of a malformation could be determined by visual inspection from the earliest months of life.

Dr. W. PEYRE PORCHER (Charleston, South Carolina) reported a case of immediate tracheotomy in which the tube was retained for three weeks. He expressed the opinion that congenital stridor was due to congenital cachexia. Resort to surgery was an acknowledgment of conscious weakness or ignorance, and proper medicaments should relieve the condition.

Dr. CHEVALIER JACKSON (Pittsburg, Pennsylvania) said the only case he had ever seen in which the stridor was congenital was that of a two months old infant that died before he could reach it for tracheotomy. There had been a history of stridor without cyanosis since birth. He split the larynx, and found a papilloma at the anterior commissure dangling by a narrow pedicle. The growth was too small to cause stenosis; whether there was a spasm of the glottis or an indrawing of the border of the laryngeal orifice on account of the increased inspiratory effort due to partial stenosis he did not know. Nor could he say whether the papilloma was congenital or not; the history only indicated that the breathing at times had been stridulous since birth.

REPLIES.

Dr. LOGAN TURNER, in closing the discussion, thanked the members for the kind way in which they had listened to him. He wished to again emphasise the statement which he had made when opening the discussion, that the subject had been intentionally limited to the condition known as congenital laryngeal stridor. It was a well-recognised clinical condition, and its etiology was still a matter of difficulty. He had sought to lay before the meeting the four main views that had been enunciated regarding its etiology. He thought the first two might be put aside. The question as to whether they had to deal with a congenital malformation of the upper aperture of the larynx or an acquired malformation the result of a respiratory neurosis still remained an open one. They had had an expression of opinion from the adherents of each of these views. The discussion did not seem to Dr. Turner to have thrown any fresh light upon this interesting subject. He had heard nothing to cause him to change his view, which was in accordance with that put forward by Dr. John Thomson.

Dr. ASHBY, in reply, said that he distrusted the explanation which sought to fasten the onus on a "flopperty" epiglottis of producing the stridor in these congenital cases. He thought that in this instance, as in the case of defective speech and a difficulty in swallowing, the origin of the trouble lay in a failure of co-ordination, or, in other words, the nerve-muscle arrangements were imperfect. The close association between an emotional state of the infant and an exacerbation of the stridor and stenosis seemed to point to this.

THE PATHOGENIC INFLUENCE OF AURAL LESIONS IN SYSTEMIC DISEASE.¹

By S. MACCUEEN SMITH, M.D.,
Philadelphia.

SINCE the advent of bacteriology our views regarding the etiology of disease have materially changed. The study of micro-organisms and their products of metabolism, often toxic, has revealed to us an entirely new process for the propagation of disease. These studies have taught us that an insignificant focus in a distant organ or tissue may abruptly or insidiously produce a systemic affection. This is true, not only of pyogenic organisms, but of many other bacteria which are not strictly regarded as capable of generating septic processes. The medical literature of the last few years contains many reports of bacterial foci causing systemic disease after a long period of latency. As an illustration of this we may mention empyemata and arthritic suppurations occurring years after an attack of enteric fever. Often the original focus may be detected, and under suitable curative measures the resulting systemic affection is sometimes relieved. But there are many instances in which the underlying cause cannot be recognised. Since the manifestations are partly septic and partly pyæmic, Leube (¹) in 1878 proposed for these the term "cryptogenic septicopyæmia." In the majority of the cases there are no indications of trauma.

It has long been known that the mouth and aural passages are frequently the ports of entrance for bacteria, particularly for pathogenic micro-organisms. In these areas the soil is especially adapted to the cultivation and propagation of low forms of life; this explains the relation between tonsillitis and acute articular rheumatism, which was noted by the celebrated clinician Bouil-

¹ Communicated to the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

laud⁽²⁾. The condition here produced was not supposed to be reflex, but due to direct propagation.

The middle ear is often the seat of infection. In performing 100 autopsies on infants, Ponfick found only 9 presenting no disease of the ear; in 13 it was unilateral and in 78 bilateral. It is interesting to note that among 81,648 patients with disease of the ear Hessler⁽³⁾ found 116 cases in which death was due to intra-cranial disease; in 40—that is, 34.5 per cent.—to meningitis; in 28—that is, 24.1 per cent.—to brain abscess; and in 48—or 41.4 per cent.—to sinus, phlebitis, and pyæmia. In children with broncho-pneumonic foci 99 per cent. showed otitis media. The micro-organisms most often detected in acute otitis media are Fraenkel's diplococcus of pneumonia, the *Streptococcus pyogenes*, the *Staphylococcus pyogenes albus* and *aureus*, and Friedländer's pneumo-bacillus.

In the purulent as well as sero-purulent and mucous exudate of 43 infants whose cases he investigated bacteriologically Rosch found Fraenkel's diplococcus 33 times and once Weichselbaum's diplococcus. In 4 cases in which perforation of the tympanic membrane had occurred no pneumococci were found, but in 1 case staphylococci and in 2 cases tubercle bacilli⁽⁴⁾. Gonococci have been demonstrated by Finch and Hang in pus within the ear of the newborn. It is well known that otitis media (and even mastoid disease) is common in many of the acute infectious diseases—for instance, in influenza, enteric fever, measles, and scarlatina. It is also a frequent sequel of pneumonia, but is quite rare in typhus fever, relapsing fever, variola, and varicella. In acute rheumatic fever otitis is occasionally an early symptom of the localisation of the disease, but epidemic parotitis is rarely followed by disease of the middle ear. Erysipelas is sometimes accompanied by severe purulent otitis, which is prone to implicate adjoining structures.

Some of the chronic infections—such as tuberculosis and syphilis—as well as diabetes and Bright's disease, play a part in the etiology of disease of the middle ear. The affection has been observed in puerperal fever and in endocarditis (Trautmann), in both of these probably by means of an embolus. Körner⁽⁵⁾ reports that among 115 cases in which death resulted from an aural lesion and in which autopsies were held, in 31 simple meningitis was revealed, in 41 sinus phlebitis and pyæmia, and in 43 abscess of the brain. These figures clearly show the prevalence of sepsis in aural diseases.

Without doubt the overwhelming majority of cases of otogenous

sepsis which run their course with metastases originate from a septic phlebitis, and usually implicate the transverse sinus or the petrosal sinus, but not infrequently even the highest point of the bulb of the jugular vein (Lenhartz) (6).

PATHOLOGIC ANATOMY.

The pathology of otogenous septicopyæmia includes changes in the primary focus in the ear and secondary changes in the various organs and tissues from septicopyæmic metastases. In another series of cases the primary disease is propagated from the ear to the neighbouring sinus in the brain and to the jugular vein; therefore meningitis and brain abscess are ordinary complications of septic disease which originates within the ear.

The general lesions do not differ from those common to septic processes. There may be inflammation of any tissue or organ in the body, varying in degree from simple congestion to suppuration; no region is entirely exempt. It is extremely difficult to say why, in the individual case, a primary purulent focus runs its course without reaction, or why, on the contrary, it generates metastases or septicæmia. It is probable that other factors, such as exhaustion, starvation, alcoholism, anæmia, or preceding affections (especially the chronic ones, tuberculosis, syphilis), or metallic poisoning (lead and arsenic), may here play a rôle.

SYMPTOMS.

Septicopyæmia is the principal systemic condition to which disease of the ear gives rise. The symptomatology is so manifold and protean that a comprehensive description of the various signs and manifestations is almost impossible. This has led to a division into groups, in which one or more symptoms are apt to stand out prominently, characterising the type. Thus Jürgensen, in his article upon sepsis (7), proposes five groups, as follows:

(1) Group in which the general phenomena are most prominent. Rapid decay and death, as in any other severe infection.

(2) Group in which the cardiac implication is most prominent. Rarely is the inflammation limited to the myocardium, endocardium, or pericardium; it is best to speak of pancarditis, and in the individual case an attempt should be made to recognise the most markedly implicated part.

(3) Group of predominant implication of the bones and joints.

In this category belong the severe forms which have been known for a long time—bone or joint typhus as they were called by Chassaignac, now usually designated, according to Lücke, as primary, infectious, osseous, and periosteal inflammations. The metastatic arthritic inflammation in the old clinical picture of pyæmia belongs to this group. In the milder forms we must differentiate between the “rheumatic” affections and, above all, from acute articular rheumatism.

(4) Group in which inflammations of the skin and the subcutaneous connective tissue and in the muscles is predominant, thence affecting the mucous membranes and the serous membranes. The severe forms—acute septic phlegmon is the name of a pyogenic cocci infection which has been recognised for some time—gradually change into the milder variety. Any one wishing to do so may make subordinate divisions, but I myself believe that the general division is sufficient.

(5) Group in which inflammation of the internal organs is predominant—brain, lung, kidney, spleen, liver, stomach, and intestines. Here the disturbance in the activity of the affected organ is most marked in the morbid picture, often to the extent that it completely dominates the situation.

A further grouping is hardly necessary, although the temperature is of special importance. The temperature is so irregular as to justify the statement that “any type of temperature curve may be observed.” The absolute variations are between 109.5° and 93.5° F.; therefore febrile and afebrile temperatures are met with. A main condition referable to the fever is its tendency to very abrupt change in connection with a variable interoccurrence of chills. The pulse is disproportionately accelerated, from 120 to 150, soft, dirotic, and often irregular.

A few symptoms must be described more in detail. These refer to inflammations of the joints and bones, cutaneous eruptions, some few nervous symptoms, and the ophthalmoscopic findings.

Of the greatest diagnostic importance, perhaps only second to the occurrence of endocarditis, is inflammation of the joints, of which one or more may be affected. At the same time the inflammatory condition disappears and recurs much as in acute rheumatic fever. But a septic joint inflammation is of a much more persistent nature. The entire process frequently is concentrated to one joint and does not show the tendency to symmetry which is so common in acute rheumatic fever. Another point of importance in regard to septic joint inflammation is the implication of the bone

itself as well as the joint ; thus tenderness upon pressure over the bone is a common manifestation. Implication of the muscles is less frequent.

Another point, important in differential diagnosis, is the frequency of the disease of the small joints, such as those of the phalanges, in contrast to the condition in acute rheumatic fever.

The most varied skin eruptions occur in sepsis, from a simple erythema to different types of petechia. In fact, it may be stated that there is hardly a cutaneous manifestation which may not appear in the course of septicopyæmia. In three fourths of all cases eruptions are present.

Nervous symptoms are exceedingly common : headache, vertigo, insomnia, various psychical conditions, convulsions, and paralyzes affecting single nerves or even nerve groups. Meningitis, especially purulent meningitis, is very liable to be a resultant condition and the starting-point of sepsis in aural lesions.

Litten was the first to study retinal changes, especially hæmorrhages, in sepsis, and while such retinal hæmorrhages are not strictly pathognomonic, they nevertheless form an important link in the diagnosis.

DIAGNOSIS.

The diagnosis may be exceedingly difficult, particularly if the focus within the ear, from which the sepsis spreads, is overlooked. The differentiation from malaria offers least difficulty, for upon examination of the blood the plasmodium will be found in the greatest majority of cases. Besides the chill, fever and sweating by no means show the regularity in sepsis which is so characteristic of a malarial attack.

The kidneys are invariably affected. Albumen may be excreted in large amounts, and all forms of inflammation of the organ have been observed. Uræmic phenomena are common. Acute nephritis and even contracted kidney may be the result of sepsis.

When blood counts were first made to determine the presence or absence of severe infection, leucocytosis was the all-governing factor, but after more careful study, with numerous observations, the consensus of opinion is that a differential count must be made, and that leucocytosis is more of an index to body resistance in an infection than to its severity. For example, a person with good resistance may have a marked leucocytosis as the result of a slight infection, and, on the other hand, a person

with impaired resistance may have little or no increase in the number of white cells with a very severe infection. The relative number of polynuclear leucocytes is of the greatest significance in the determination of the presence of a purulent or gangrenous process. The normal percentage of these cells varies between 59 per cent. and 68 per cent., with an average of about 62 per cent. If there is a relative count of less than 70 per cent. no pus need be suspected. Pus is not common with less than 80 per cent., except in children, where it has been found with a count as low as 73 per cent. Above 93 per cent. indicates a very severe process, and when it reaches 95 per cent. it may be considered almost fatal. Fowler (⁸) cites two very interesting cases:

(1) A young woman with serous otitis media had pain, rapid pulse, temperature, etc., indicative of acute mastoid disease, but as the polynuclear cells reached only 59.7 per cent., operative procedure was deferred, and the patient recovered without operation.

(2) A young man, recovering from mastoid involvement as a result of acute purulent otitis media, and for which he had been operated upon, began to show evidence of meningeal irritation with only slight inflammation, except that the polynuclear cells were up to 82.3 per cent. Operation disclosed a large abscess, and the patient subsequently died from meningitis. In both of these cases the percentage of polynuclear cells was accepted as an index for or against surgical interference.

From these observations we reach the following conclusions: (1) A marked leucocytosis, with a relative percentage of polynuclear cells below 70, shows a slight infection with good resistance. (2) A marked leucocytosis, with relative percentage of polynuclear cells above 80, shows severe infection with good body resistance. (3) Slight or absent leucocytosis, with relative percentage of polynuclear cells above 80, shows severe infection with impaired resistance.

In the differential diagnosis acute articular rheumatism, malaria, acute miliary tuberculosis, enteric fever, and nraemia must be considered.

To differentiate from acute rheumatic fever is often difficult. Inflammation of the joint, eruptions, implication of the endocardium and pericardium, and sweating are common to both conditions, but in acute rheumatic fever the large joints are much more liable to be involved. There is a symmetry in the joint implication, as well as a more fleeting character of the arthritic inflammation; while in sepsis but a single joint may be affected, the inflammation showing no tendency to involve other joints. Besides, a therapeutic diagnosis may aid us. Thus, large

doses of the salicylates rapidly improve a rheumatic joint affection, while they have little or no influence upon the septic joint.

The differentiation from miliary tuberculosis is much more difficult. Common to both diseases is the acute flooding of the body with pathogenic organisms, the severe clinical picture, the enlargement of the spleen, the rapid pulse, the involvement of the pleura, pericardium, and peritoneum, meninges, and other serous structures; but in acute miliary tuberculosis dyspnoea and apical disease are much more liable to be present. Tubercle bacilli, if present in the sputum, urine, blood, or fæces, naturally are important in the diagnosis; but, unfortunately, this sign is often absent in acute miliary tuberculosis. The diagnosis can often be made only from the course of the disease.

Enteric fever is not so difficult to differentiate from sepsis. The characteristic eruption, the Widal reaction, the course of the temperature, favour enteric fever, while retinal hæmorrhages, inflammation of the joints, endocarditis, and leucytosis favour sepsis.

Uræmia often cannot be differentiated from sepsis, for uræmic manifestations, as previously stated, are by no means uncommon in the course of septic infection. The entire clinical picture must be considered before we can reach a definite decision.

Frequently we are greatly in doubt as to the exact nature of the complication arising from an aural lesion, especially when the focal disease is not in itself sufficiently severe to account for the alarming constitutional disturbance. This is well illustrated in the case reported by S. E. Allen⁽⁹⁾:

G. H.—, aged twenty-four, presented himself on March 9, 1898, suffering from acute middle-ear disease. He was seen daily until March 25, when he had a severe chill, with a temperature of 103° F., and was apparently seriously ill. His expression was anxious and the pain in the ear was intolerable. All the symptoms of a beginning purulent meningitis seemed to be present. He was admitted to the hospital and the mastoid process opened up into the antrum; no pus, necrotic or carious bone, nor granulations were found. The bone toward the lateral sinus was in a normal condition, and the sinus was not laid bare. The posterior wall of the meatus was then severed, and the healthy ossicles with the remnants of the drum membrane removed, thus giving access to the tympanic cavity. The cavity was thoroughly explored with a fine probe and no break discovered. The floor of the tympanic cavity was covered with slight granulations, and these were removed with a sharp spoon. The temperature at the time of the operation was 104° F. The patient rallied from the operation nicely, and the pain in the head and ear, which had been unbearable, left him, and was never afterwards complained of. The temperature, however, continued high, ranging from 101° F. to 103·5° F. A few days after the operation the patient complained of pain in the right foot, and its upper surface became reddened and slightly swollen. Then the right shoulder

and upper arm became swollen and extremely painful. One week from the date of the operation the patient was given an anæsthetic and a free incision made into the inner surface of the arm and some pus evacuated. There was no regular abscess cavity; the pus seemed to be diffused throughout the tissues. The right shoulder was also scarified. The temperature continued as before, the left wrist and elbow became swollen and painful, but no suppuration occurred. The patient's condition continued precarious till about the middle of April, when convalescence gradually set in, and he was discharged from the hospital on May 13.

In 1904 the writer ⁽¹⁰⁾ reported three cases of metastatic abscess of the liver in which it was shown that the hepatic infection had its origin in the organ of hearing. A brief history of one of those cases will serve as an illustration.

J. W. D——, male, aged forty-two, had had a suppurative otitis media extending over a period of twenty-seven years, the original infection complicating an attack of pneumonia. For about twenty years following the spontaneous rupture of the right membrana tympani, the patient suffered no inconvenience except a continued slight discharge from the ear. Then the disease became quiescent and the patient felt that he had been cured, the ultimate outcome of his former condition never having given him any concern except from a cosmetic standpoint. But this immunity was enjoyed for about two years only, when he suffered a relapse, which was characterised by severe pain for two or three days, followed by an offensive reddish-yellow discharge. There was marked improvement, however, within a few weeks in regard to both the quantity and quality of the discharge, though at the end of about one year he again suffered from an acute exacerbation, which recurred at frequent intervals during the following three years.

It was while suffering from one of these acute exacerbations, and about three weeks before the patient's death, that the writer saw the case with the attending physician. Briefly, the clinical picture was as follows: After a severe chill the patient's temperature suddenly registered 105.2° F., which was followed by profuse sweat. The only pain complained of was located in the right shoulder and neck, and was intensified when the patient moved or rested on his left side. A moderate muddy yellowness of the skin was noticeable on close inspection, the conjunctivæ, however, being normal. The aural examination revealed a chronic suppurative otitis media, with entire destruction of the membrana tympani, malleus, and incus; there was no acute inflammatory condition involving the tympanic cavity or canal, nor did the superior and posterior wall show any evidence of undue redness or drooping. The middle ear was entirely free from any granulation-tissue or other pathologic process. Pus was, of course, present, but was small in quantity and quite offensive. On microscopic examination it showed the presence of the *Streptococcus pyogenes*, *Staphylococcus pyogenes albus* and *aureus*, and the pneumococcus. The patient complained of no discomfort whatever about the head, and the mastoid and adjacent parts showed no evidence of involvement. The irregular fever, with chills and sweats, together with an ever-increasing pain in the right shoulder and neck, continued until within one week of his death, when for the first time he also complained of some pain in the right hypochondrium. On examination the attending physician observed distinct enlargement of the liver, with tenderness on pressure, and at the same time a marked increase of the icterus was noted.

The temperature was pyæmic throughout this latter attack, varying from almost normal to 106.6° F. The chills during the last week of his illness were not

severe, but his sweats were most profuse, at times saturating the bed-clothing. After the true nature of his illness became manifest, the patient received the most energetic treatment and intelligent care at the hands of his attending physician. Aspiration or other operative interference was not resorted to, the wisdom of which course was afterwards sustained by the *post-mortem* examination. Immediately preceding the patient's death the temperature registered 106° F. and a fraction, death occurring while in a state of violent convulsions.

It is well to state that, in connection with various methods of treatment, anti-streptococcic serum was used in full doses with only passing benefit.

The results of the *post-mortem* examination were interesting from the fact that every viscus except the liver was found to be normal, the liver being a mass of miliary abscesses. An especially interesting part of the patient's history was the incessant, and at times very severe, pain, involving the right shoulder and neck. On two separate occasions the writer felt he was not only justified, but that it was his duty, to make an exploratory incision to determine the possibility of a thrombosed jugular, notwithstanding all symptoms of such a condition, minus pain and suggestive temperature, were absent. The results of the autopsy demonstrated that the better judgment prevailed. It was also interesting to note the normal condition of the mastoid and interior of the skull generally.

A case of unusual interest, in which the patient died from an unrecognised and unsuspected ear lesion, is also reported by George Carpenter⁽¹¹⁾:

D. R.—, aged fourteen months, was brought to the hospital with the history of having received a blow on the back of the head and also an injury over the left ear. The accident was not sufficient to render the child unconscious. When first seen, four days after the accident, the patient was in a comatose state. The face was pale, the extremities cold, the pupils were equal and reacted to light, the pulse was quick but not irregular, the respirations were shallow and irregular, the head was retracted, and the temperature 102° F. The left ear was red, and blistered in the upper half. There were convulsive movements and slight rigidity on both sides of the body, but more marked on the left. The muscles responded to stimulation; the knee-jerk was very slight on the left, while quite brisk on the right. Protruding movements of the tongue were noted, and occasionally the eye became fixed towards the left. There was doubtful ptosis of the left eye, but otherwise it was normal. Examination with the otoscope failed to detect any abnormality. A diagnosis of meningitis was made and medical treatment instituted. The temperature continued to increase, reaching 107·6° F. on the third day, and the child died the following morning.

Post-mortem examination revealed a localised collection of pus in the middle ear. The tympanic membrane appeared healthy and there was no evidence of rupture. Patches of collapse were present in both lungs; the stomach showed dark brown patches of blood; all the other organs were free from disease, and no tubercles were found.

Carpenter states that "this case teaches a lesson which should ever be before the mind when called to diagnose a case showing head symptoms, namely to examine the ears as a matter of routine. A habit thus induced will presently become automatic, and sooner or later the doctor practising this routine will be rewarded by saving a life unnecessarily doomed to destruction, and the patient

will greatly benefit by his declining to accept as meningitis without a protest everything that stalks about in the garb of that disorder. I have, I believe, saved more than one case by a timely myringotomy and evacuation of the pus. Unfortunately, in my experience, pus, as in this case, cannot always be recognised through the tympanic membrane, and the appearance of the drum may not be sufficiently removed from the normal to warrant the suspicion of an acute inflammatory process 'well alight' behind it. That such may occasionally prove to be the case must in no wise prove an excuse for the relaxation of vigilance, and in a doubtful case no single examination can be considered to have absolved the doctor from all responsibility on the score of ear mischief."

We are greatly indebted to Carpenter for placing on record this very interesting case, but regret our inability to concur in his opinion that the presence of a purulent exudate within the tympanic cavity may not be diagnosed by the experienced aurist. Even in cases of hydrops *ex vacuo*, where there may be absolutely no inflammatory changes in the membrana tympani, the presence of fluid is readily recognised. It is, therefore, quite inconceivable that inflammatory *débris* can accumulate within the middle-ear cavity without producing pathologic changes easily recognisable.

The point of chief interest in Carpenter's case is the forceful manner in which he demands the routine examination (I may add by an expert) of the ear. This is especially important, as the writer has frequently pointed out, in all cases of illness in which the diagnosis is doubtful. To further illustrate this important point, the writer will briefly state one case, in which the ear, although not suspected, was subsequently shown to be the site of the primary lesion—in fact, the only organ in which disease could be detected.

C. K—, male, aged twenty, of good personal and family history. Had measles and mumps during childhood, otherwise enjoyed exceptionally good health until July, 1905, when he contracted a severe attack of diphtheria, convalescence occupying more than three months, most of which time he suffered from painful deglutition, but at no time did he show any evidence of ear complication.

On December 26, 1905, he was compelled to go to bed, after feeling more or less ill for several days, where he remained for two weeks. At the end of another week he returned to work, but was able to continue only a few days, on account of an ever-increasing "fulness" in the right side of the head. His condition grew worse from day to day, the prominent symptoms being headache, some temperature, chills followed by profuse sweating, mostly at night, pain in the back, chest, and abdominal region; to this was added considerable cough, with profuse dark-greenish expectoration. The pain in the head grew progressively worse, but not especially marked in any locality. His case was now pronounced typhoid fever.

For some days the above symptoms continued in an aggravated form, when suddenly he complained of some pain in the right ear, which was followed almost immediately by a discharge of foul-smelling pus. The escape of the discharge from the ear, however, did not relieve his symptoms, which, on the contrary, grew progressively worse. He was now sent to the hospital, little or no thought having been directed to his ear. On admission his temperature was 102.2° F., pulse 101, respirations 30. While he was dull and listless, yet in some ways he manifestly exhibited signs of marked excitability, plainly showing his apprehension of impending danger. The writer was asked to examine the ear, and found unmistakable evidence of extensive tympanic and mastoid involvement. The cortex was normal in appearance, but painful on deep pressure; a foul-smelling, brownish-yellow discharge filled the canal, which, when removed, revealed a large carious opening through the bony canal leading into the mastoid and filled with granulation-tissue. The membrana tympani was mostly destroyed, which plainly showed the tympanic cavity filled with granulation-tissue and other inflammatory *débris*.

An immediate radical operation was performed. A carious opening through the attic roof and exposed dura provided drainage for considerable pus which escaped from the interior of the skull, evidently from the temporo-sphenoidal lobe. The sinus was also exposed by the necrotic process, but not otherwise involved. In brief, the mastoid was exceptionally large, the entire process having undergone extensive necrotic changes, making, when the operation was completed, the largest opening in the skull that the writer has ever seen. From the date of the operation the patient began to improve, all the obscure symptoms promptly disappeared, and the patient made an uninterrupted recovery.

The above case demonstrates clearly the value of routine aural examination in all cases of doubtful diagnosis, as this patient was treated in turn for tuberculosis, rheumatism, and typhoid fever. From the fact that the patient did not complain of aural distress, together with an entire absence of the clinical symptoms of mastoid disease, the ear lesion, the sole cause of his illness, suffered absolute neglect, notwithstanding a foul-smelling discharge was escaping from the external canal. This case, furthermore, serves to illustrate the curious—I may venture to say unpardonable—apathy of the profession toward an aural discharge and its far-reaching consequences. It would be both startling and humiliating to the medical world if it could even approximately compute the number of children borne to their graves under the professional caption of meningitis, while the primary cause of their illness, the organ of hearing, was not even suspected. This applies equally to cases without visible suppuration as well as to those presenting a discharging ear. Indeed, the writer's experience impels the belief that idiopathic infantile meningitis is decidedly uncommon, and that a great majority of such cases are aural in origin; notwithstanding, the ear as a causative factor is overlooked.

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- (4) *Deutsche Klinik*, Bd. viii, p. 196.
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- (6) "Die Septischen Erkrankungen," Nothnagel's "Specielle Pathologie und Therapie," Bd. iii, 2, p. 338.
- (7) "Modern Clinical Medicine," p. 655.
- (8) "Treatise of Surgery," vol. i, p. 255.
- (9) *Cincinnati Lancet-Clinic*, vol. xli, 1898, p. 401.
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DISCUSSION.

Dr. MURRAY MACFARLANE said that Dr. MacCuen Smith's paper indicated the advisability of examination of the ear in cases of general disease. Recently he had been called in consultation in a case of apparently acute articular rheumatism following a typical pharyngitis. The knees and elbows were the joints affected. The patient had suffered similarly before under the care of the same physician. Three days later he saw the case owing to "earache." He found the membrana tympani bulged, and made a free incision, thus liberating a serous fluid, which gave relief to the pain. A chill had been complained of a few hours before with a sudden rise of temperature. There was no mastoid pain. Being suspicious, he suggested the possibility of the joint affection being purulent, and next day aspiration revealed the presence of pus in large quantities. The mastoid, having become tender, was opened, and thrombosis of the lateral sinus was found. The usual removal of infective material was carried out. The question was whether there really ever existed an acute rheumatism. Was it pyæmia from the first, due to infection of the middle ear, with pus-formation, or were the ear symptoms a part of the general systemic involvement, or were the joints, already the seat of rheumatic disease, invaded by streptococci of problematical origin? The patient died about a week later.

The PRESIDENT considered the recommendation as to the blood count most valuable.

THE MEDICAL GRADUATES' COLLEGE will hold its eighth annual dinner at the Trocadero Restaurant, Piccadilly Circus, on Wednesday, December 12, at 7.15 for 7.30 p.m. Professor Clifford Allbutt will be in the chair.

TO WHAT EXTENT IS IT ADVISABLE TO ADOPT CONSERVATIVE METHODS IN THE TREATMENT OF AURAL DISEASES? ¹

BY GORHAM BACON, M.D.,

Professor of Otology, College of Physicians and Surgeons, Columbia University,
New York.

THE most difficult problem which the aural surgeon is called upon to consider at the present time is the question of when to operate, especially as so many important operations are being performed in otology and so many diverse opinions are held by operators as to whether conservative or radical methods of treatment should be adopted. We all remember how the medical press only a few years ago was filled with the report of successful attempts to improve the hearing of cases of chronic catarrhal deafness by the excision of one or more ossicles. At the present time this operation is generally condemned except in cases of caries or necrosis of the ossicles. The hearing of many of these unfortunate patients was in many instances made very much worse by this operative interference. At the present time the attention of otologists is more especially directed to the Schwartz-Stacke operation for the cure of chronic otorrhœa, the mastoid operation, and operations for intracranial complications, more particularly sinus thrombosis.

It seems to me to be the duty of those of us who are engaged in teaching medical students to impress upon them at all times the value of conservative methods in many cases; for I feel that at the present moment there is too great an inclination on the part of many to operate "too early," and that we should do well to constantly bear in mind what Oliver Wendell Holmes once said, that "Nature is kinder than the doctors think."

The majority of aural surgeons are agreed that an early incision of the drumhead is imperative, if we wish to ward off mastoiditis, particularly if the membrane is bulging and the patient has fever and pain. In many cases of streptococcus or pneumococcus infection it is wise to incise the drumhead if the patient has pain and fever, even if there is no bulging. Of late some opposition has been raised against this operation in cases of acute suppurative otitis media, but I cannot understand why one should wait for a possible mastoiditis to develop, when by an early incision we fre-

¹ Communicated to the Section of Laryngology and Otology, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

quently prevent just such a complication. According to my experience, when the drumhead is incised early, the course of the disease is less prolonged and the patient has better hearing than when the case is left to Nature. As to the time to operate in mastoiditis, there is not by any means the same unanimity of opinion. A writer recently has said that "in all cases of middle-ear inflammation in childhood, where free myringotomy does not relieve pain and temperature at the end of a few days, the mastoid should be opened and the typical mastoid operation done, even upon no other indications than pain and temperature, and in young children considerable temperature alone is a sufficient indication." We all know how easily a child will develop a temperature, and if we rely upon this symptom alone we shall easily fall into a serious error, and run the risk of opening a healthy mastoid. Only recently I had two infants under my care. They were teething, and each suffered from an acute suppurative otitis media on both sides. They were seen early, before rupture of the drumhead had occurred, and an otitis media was suspected by the general practitioner owing to the high temperature. Under chloroform a free incision was made in each drumhead. In each instance the temperature fell at once, but the children had more or less fever for from three to four weeks, and the discharge did not cease until the children were sent into the country, when it almost immediately stopped. At no time was there any apparent symptom of mastoiditis. The blood was examined constantly for an increase of the leucocytes and the polymorphonuclear elements, and several incisions were made in the drumhead in each case at different times. I attach much more importance to the child's general appearance and condition than to a rise in temperature.

A child that is teething is likely to be irritable, to have more or less fever, and frequently a suppurative otitis media. The temperature will often continue until the tooth appears. When the latter occurs the discharge from the ear generally becomes less and ceases very soon. We are likely to fall into a serious error if we attach too much importance to fever alone in children. A short time ago I was asked to see an infant under one year, who seemed perfectly well during the morning, but in the afternoon, when a high temperature developed, the child was more or less inclined to sleep and be restless. Six physicians had already seen the child, but could not find any cause for the fever. I was asked to examine the ears; they were perfectly normal. The child recovered, but the nature of the ailment could never be explained.

Another child, a boy of sixteen months, I saw in consultation on February 10, 1906. The family physician said that on January 27 he was taken ill with high temperature and stomach trouble, and he had severe *grippe* symptoms. On February 1st the left drumhead seemed to bulge, and the doctor incised it, and since then there has been a discharge of bloody serum. The temperature remained a little lower for about twenty-four hours. The right drumhead was bulging on February 5. It was incised, and but little discharge came from it. The temperature has been lower in the morning, but in the afternoon has risen to 103° to 104° F. When seen in consultation the temperature was 101° F., and he seemed better than he had been for some time. The glands in the neck were much enlarged. As there was a small opening in each drumhead I made a free incision in each membrane. The baby made a good recovery.

We must not overlook the fact that, in some cases of acute otitis media due to the *grippe*, especially in children, the high temperature may be due to a latent pneumonia, the physical signs of which cannot often be made out for several days. I must confess to having operated on a young girl when the temperature was 106.2° F., with marked tenderness over the mastoid. A free incision had previously been made. The case was one of severe *grippe* infection, and the chest had been carefully examined, but no evidences of pneumonia could be discovered. Twenty-four hours after the mastoid operation evidences of consolidation were detected. The patient recovered. The temperature in this case was due to the pneumonia, and the patient would probably have recovered without operation as the cells were only softened, and did not contain pus. We should be careful in administering ether or chloroform in all cases of *grippe* infection for fear of setting up a pneumonia.

To show what can be accomplished by conservative methods I would refer you to a paper published in the *Archives of Otology* in 1901, in which I reported forty cases of "acute purulent otitis media, complicated by acute inflammation of the mastoid cell," occurring in private practice. In ten cases it was necessary to perform the mastoid operation, while in thirty recovery followed without operation. The latter were treated by means of the artificial leech, the Leiter coil, free incision of the drumhead and general treatment, rest in bed, etc.

Not long ago I was called in consultation to see a child that had had an acute otitis media for several days. Two incisions had

been made in the drumhead, and all preparations were made for an operation that same day, but the temperature declining suddenly, it was deemed best to wait twenty-four hours longer, and on the next day the child was so much improved that she escaped a mastoid operation. The child felt perfectly well, was happy, and slept during each night, and the only symptoms were temperature and slight tenderness on pressure over the mastoid.

It seems to the writer that it is impossible to lay down any hard and fast rules as to when the mastoid cells should be opened. Before deciding such a question we must secure all possible information bearing on the case. If the streptococcus or pneumococcus is present, and the patient is suffering from a marked toxæmia, we should not wait if the patient has well-marked symptoms of mastoid inflammation, and an attempt has already been made to drain the middle ear by a free incision in the drumhead.

In a child affected with a virulent streptococcus infection I opened the mastoid cells on the fourth day after the middle-ear infection, and found the sinus exposed and a Bezold perforation, showing clearly how rapid the destruction of bone may be in some cases. I have also opened a mastoid process in a man where there was no pain on pressure and only a slight degree of fever, but where the patient had a profuse discharge which did not yield to treatment, and he had a septic appearance. The cells were broken down and filled with pus.

On the other hand, a child may be bright and happy and appear in good condition except for the fact that an acute otitis media with mastoid symptoms causes a temperature. In these cases not only one incision should be made, but in many instances it may be repeated several times, when all symptoms of mastoiditis will frequently disappear, and the child will recover. In adults, also, we should be guided largely by the nature of the infection and the general appearance of the patient, as well as by the blood count. Daily examinations of the blood should be made in order to determine whether the leucocytosis is increasing or decreasing, and what relative changes are taking place in the cell percentage. For example, if the leucocytosis is falling and the polynuclear percentage is above normal and rising, the prognosis is not so good as when both are falling, or when the leucocytosis is increasing and the polynuclear percentage is falling. According to Sondern, "the increase in the relative number of polynuclear cells is a direct indication of the severity of the toxic infection, and the degree of

leucocytosis an absolute indication of the body resistance towards the infection." No definite rule can be laid down at present to aid the aural surgeon. We ought to have a knowledge of the normal average leucocytosis and cell percentage in each individual in order to have a rational basis from which to draw conclusions, but with other clinical symptoms a blood count will assist us in deciding when to operate.

In a study of eighty-nine cases of acute and chronic purulent otitis media with and without complications, made by Dixon at the New York Eye and Ear Infirmary, it was found that the leucocytosis in those cases with mastoiditis as a complication ranged from 5000 to 17,800, and the average polynuclear percentage was within the normal limits. It was not until the more serious complications occurred, such as epidural abscess, sinus thrombosis, and intra-cranial invasion, that the blood count began to have any very marked significance. The leucocytosis occurring in the course of intra-cranial complications does not appear to be so high as in pneumonia. As exceptions occur, we must not rely too positively upon the blood count alone.

We can afford to wait longer in children than in adults before opening the mastoid cells, because in the former the suppurative process is more likely to extend outward through the thin, soft cortex, while in the latter the inflammation is more likely to involve the cranial cavity. Of 281 cases collected by Hill Hastings (¹) in which the mastoid operation was performed, perisinous abscesses were found in 46 cases, epidural abscesses in 21 cases. Hastings says: "It is noteworthy that only 16 of the 67 cases were children (under ten years of age) while of the 72 cases of subperiosteal abscesses 46 were children."

The value of trying conservative treatment in chronic otorrhœa rather than the performance of the Schwartz-Stacke operation is clearly shown in the report of the following case :

A coachman, aged twenty-five, had been a sufferer from chronic otorrhœa for many years, but had had but little treatment for it. His case was called to my attention in February, 1906, owing to the fact that he had been told by a specialist in New York that he must have a radical operation performed at once. He told me that two days before he had had a chill while driving, and had been obliged to give up work and had gone to a hospital for advice. He was told that a Schwartz-Stacke operation should be performed immediately. On examination I found that he had a large fibrous polypus protruding from the right ear, and that the discharge was prevented from escaping owing to the occlusion of the canal. There was slight tenderness over the mastoid process. I advised against an immediate radical operation, although I told him that later this might be necessary. I then removed with Blake's snare and with other instruments the polypus, thereby

establishing good drainage. In about ten days' time the man was able to resume his work, and all the disagreeable symptoms disappeared.

It would have been a great hardship for this man to have submitted to an operation at that time, as he had a family dependent upon him.

I have always found great difficulty in persuading physicians who have consulted me on account of chronic otorrhœa to have any operative work performed on them. Knowing well the complications that may arise, they seem to prefer taking chances in many instances. The following case will illustrate this point :

A physician, aged thirty-five, consulted me two years ago on account of a very foul-smelling otorrhœa of long standing. The drumhead was almost entirely destroyed, and there was no obstruction to the escape of pus from the attic. There was roughened bone in the attic, but there were no evidences of cholesteatoma. I immediately washed out the attic with bichloride solution, and afterwards injected into the cavity some alcohol containing boric acid. I did not give him much encouragement as to any permanent cure from this line of treatment, but as it has invariably been my custom to commence the treatment of such cases by the use of the middle-ear syringe whenever practicable I decided to try what I could do for him on these lines, as he was strongly opposed to an operation. Much to my surprise, in a very short time there was a decided improvement. The discharge became less and the odour much less offensive. The attic was washed out with bichloride solution, and afterwards injections were made into the attic of alcohol and boric acid and other solutions. Powders were also insufflated. The improvement continued steadily, and in four months' time cicatricial tissue had formed, and the cavity was healed. I saw the patient a short time ago, and he has had no return of the discharge for two years.

I have reported numerous cases similar to this one which recovered under like treatment.

The following case is one in which the radical operation was clearly indicated :

Joseph F—, aged thirty-five, was sent to me December 29, 1905, on account of chronic otorrhœa of the right side, which he had had since he was four or five years of age. He had a constant discharge, with odour, and was troubled with an annoying tinnitus. General health fairly good. Some tenderness was present over the mastoid process at times. About one third of the drumhead on the right side was destroyed posteriorly, and on the left side the drumhead was very much retracted, and atrophic changes had made it quite thin. Hearing for the watch = R. ear 1 inch ; L. ear 1 to 2 inches. Bone-conduction increased for both ears. Slightly raised voice heard a distance of 12 feet with each ear. For the past three months he had had pain in the mastoid three or four times, and during the past six months he had been troubled with headache. He was seldom free from it now. Was very dizzy for one night about three weeks ago. On January 23 a radical Schwartze-Stacke operation was performed. The usual incision behind the ear was made, and the remains of the drumhead and ossicles were excised. Cholesteatomatous material was removed from the attic and antrum, and the roughened bone of these cavities was carefully scraped. The mastoid wound was

entirely closed by sutures, and after making an incision through the length of the cartilaginous canal, the walls of the latter were pushed against the inner wall of the bony cavity by means of narrow strips of iodoform gauze inserted in the external meatus. In a week's time the mastoid wound was entirely closed, and two weeks after the operation the patient returned to his home in New London where the treatment was continued under my supervision. On February 18 epidermatisation had almost completely covered the cavity, and there was but slight discharge; and on March 18, when he came to see me in New York, the hearing for the watch was 7 inches on each side, while the voice was heard the same as before the operation.

In considering the advisability of an operation in a patient suffering from a chronic otorrhœa, we should determine whether the perforation is sufficiently free for good drainage. If the opening is large, and we can readily pass a probe into the attic, and find but little carious bone, and further if the patient does not complain of pain, headache, or dizziness, I feel that it is our duty first of all to try to cure the disease by means of injections through a middle-ear syringe. Exuberant granulations should be removed and everything done to establish good drainage. If, on the other hand, a patient comes to us complaining of frequent attacks of earache, headache, nausea, vomiting, or vertigo, and on examination we find that good drainage is impossible, owing to a small perforation (generally in Shrapnell's membrane), and that the ossicles are carious, that the discharge is fœtid and contains cholesteatomatous masses; and moreover, if we detect a carious condition of the attic, we should advise immediate operation—either excision of the drumhead and ossicles, or a Schwartze-Stacke operation. In such cases the patient is also apt to have occasional attacks of mastoid pain, another indication for an early operation.

Haug of Munich⁽²⁾ claims to have cured sixty-four out of ninety-eight cases of suppuration in the attic. He first enlarges the site of the perforation, if necessary, so that a tympanic cannula of a large calibre can be introduced. The irrigations are made with a solution of permanganate of potash or boric acid. The cavity is then dried, and a solution of perhydrol, ten parts, in water and glycerine, ten parts each, is slowly injected into the attic. The solution is retained for a quarter of an hour, with the head turned to one side. The canal is dried, and a small pledget of cotton, soaked in a strong solution of iodine-potassium iodide-glycerine. The canal is then packed with gauze. The procedure is sometimes very painful. If necessary it is repeated in ten days. Haug has never repeated this procedure more than three times, because it is without avail if the case has not healed up in that time.

In introducing a probe into the attic we often find roughened bone. This fact alone should not have especial significance unless associated with more serious symptoms. At the annual meeting of the American Otological Society, held May 9, 1905, in discussion on chronic purulent otitis media, Gruening said: "The diagnosis of the presence of carious bone is often made by the introduction of a probe. When the probe strikes something rough it is assumed that the bone is carious. The conclusion is not correct. There is often roughness without caries. In former times, when we did not resort to the radical operation, we dealt with polypi, and we cured our cases, and what happened then can also happen now. Many cases of middle-ear disease are certainly amenable to treatment by the removal of granulations and polypi."

Other writers of late years are inclined to advocate conservative measures in individual cases, and do not try to alarm all patients afflicted with chronic otorrhœa by telling them, as some have done, that they are living over a volcano, and that they must have an immediate operation.

In a practice extending over twenty-five years my observation is that the danger of an intra-cranial complication following chronic otorrhœa is very slight among private patients. During this time I have seen many cases of purulent otitis media, and I can only recall one case that developed an intra-cranial complication—namely, a brain abscess. The patient had neglected all treatment for years, and when I saw him he had an abscess in the temporo-sphenoidal lobe. He was operated upon at once and recovered. It is among the hospital patients that we find the serious complications, especially as the poor are not apt to apply for treatment until compelled to by such symptoms as pain, headache, dizziness, tinnitus, etc., and from hospital patients most of the statistics are compiled.

If the discharge cannot be cured by the use of the middle-ear syringe, the radical operation should be performed, for after the discharge has been arrested the patient's general health is apt to be greatly improved, and the danger of an intra-cranial complication is practically impossible.

The question whether or not to ligate the internal jugular vein or to excise it in all cases of sigmoid sinus thrombosis is still under discussion by aural surgeons. For a number of years I have been in the habit of not ligating or excising the vein in cases of thrombosis of the sinus, provided the clot was not broken down and

there were no evidences of thrombosis of the internal jugular vein. In such cases I have made it a rule to wait for twenty-four hours before tying the vein, with the result that during this period I have not been obliged to excise the vein.

On the other hand, if a thrombus has already formed in the internal jugular vein or the sigmoid sinus contains pus, and especially if the patient shows symptoms of general infection, the internal jugular vein should be tied at once. In a paper read before the Society of Alumni of Bellevue Hospital, April 5, 1899, on "The Importance of an Operation in the First Stage of Thrombosis of the Sigmoid Sinus," I reported three cases occurring in children under ten in which the internal jugular vein was not ligated, and said that "unless we are quite confident that the thrombus has already extended to the internal jugular vein, it seems to me more prudent to give the patient the benefit of the doubt, for ligation of the internal jugular vein adds very much to the gravity of the operation."

McKernon, at the meeting of the American Otological Society in 1905, read a paper on "Primary Jugular Bulb Thromboses in Children as a Complication of Acute Purulent Otitis Media," in which he reported six cases operated upon, four of which were successful. One case died of encephalitis of the cerebellum, and the other one, a baby six months old, never regained consciousness after the operation. The streptococcus was the characteristic infection and the polynuclear count high. McKernon did not ligate and resect the internal jugular vein in any of these cases. He says: "Had I not been able to restore the circulation here (at the bulb) I would have done so in four of the cases, but in two of them such a procedure would have been exceedingly unwise owing to the extremely weakened condition of the patient, and would have resulted in their deaths on the operating table. I believe that in the average case of sinus or bulb involvement it is wiser to ligate and resect the vein if the patient's condition will admit of it. While four of the cases reported recovered without ligation being resorted to, it was largely due, I believe, to the fact that an early operation was done rather than that all the infective material had been removed. In young children the time element is one that enters largely into a favourable prognosis, for the shorter the time that we keep our patients on the operating table the quicker will be their convalescence."

McKernon further said: "In a large proportion of children that have come under my observation the percentage of cures is

far greater without ligation of the vein because of the added risk on account of the time consumed in ligation and removal."

Some writers seem to think that it is a matter of small importance whether the sigmoid sinus is accidentally opened during the mastoid operation. This view seems to me to be a dangerous one, and I have reported, in the *New York Medical Journal* and *Philadelphia Medical Times*, October 1, 1904, a case of thrombosis of the sigmoid sinus which was probably due to accidental incising of a normal sinus. Fortunately the patient recovered.

In a paper entitled "Notes on Three Recent Cases of Sinus Thrombosis; Two fatal; One recovered; Remarks," H. Knapp says: "Wounding of the sinus has so often proved to be without consequences that its occurrence during mastoid operations is commonly considered harmless. I do not share this opinion. In the first of the cases detailed above the sinus was slightly injured. Whether this contributed in any degree to the fatal termination of the disease I am not prepared to say. I carefully avoid wounding the sinus, and always follow conscientiously the rule that the working at the sinus should be the last step of any mastoid operation."

As to ligation of the internal jugular vein Knapp says: "It saves many a life, and should be done when, after a thorough mastoid and sinus operation, the pyæmic symptoms persist longer than a few days. In the severe cases, if not in all, the facial and external jugular veins should also be tied."

In an article by Hill Hastings⁽³⁾ entitled "A Report of 281 Mastoid Operations, with Subsequent Results," being a compilation of cases treated at the New York Eye and Ear Infirmary, he says: "The sinus was accidentally opened in nine cases. In eight no harm resulted; in one case sinus thrombosis followed. On the eleventh day after the operation the patient had a chill, followed by a temperature of 105° F. Although the clot was removed three days later, and the internal jugular vein ligated and excised, septic pneumonia developed and the patient died."

Pooley reports a case of mastoiditis, followed by sinus thrombosis and pyæmia, in which he says: "The sinus was infected at the time of the first operation. For the first three days thereafter improvement took place; then the sinus clot formed, with the subsequent appearance of the symptoms so characteristic of sinus thrombosis."

CONCLUSIONS.

(1) In all cases of acute otitis media attended with pain and temperature and bulging of the membrane, and particularly if the patient is suffering from a marked toxæmia and mastoid tenderness, an early and free incision should be made in the drumhead. It is only in the very mild cases that it is ever wise to defer opening of the drum membrane.

(2) We can often ward off a mastoid operation, if the case is seen in the hyperæmic stage, by the application of the artificial leech and the Leiter coil, and by making a free incision in the drumhead. In the case of young children we can afford to wait longer than in adults, and it is often advisable in infants and young children to make several incisions in the membrane rather than to perform an immediate mastoid operation, especially if the principal symptom is elevation of the temperature alone. The nature of the infection should be determined by an examination of the pus from the middle ear. If the streptococcus or pneumococcus is present in large numbers, and particularly if the patient has marked toxæmia with mastoid symptoms, an immediate operation in such cases is generally called for if the acute symptoms have not yielded to a free opening in the drumhead. A blood-count should be made daily in order to determine whether the leucocytosis is increasing or decreasing, and what relative changes are taking place in the cell percentage. In other words, we should obtain all the evidence possible about the case before deciding to operate rather than rely on fever and pain alone.

(3) In cases of chronic suppurative otitis media we should distinguish between those that require an early operation and those that can frequently be cured by conservative methods. In the former the drainage is apt to be poor, owing to a small perforation and to the opening becoming clogged with cholesteatomatous material, the ossicles are carious, and there is caries and necrosis of the attic. The patient in such cases complains of severe headache and pain in the ear, and if good drainage is not established he is likely to have nausea, vomiting, dizziness, and a possible intra-cranial complication. In the latter class of cases, if the drainage is good and the patient does not complain of any particular symptoms referable to the ear, the discharge can often be cured by the systematic use of the middle-ear syringe and the insufflation of powders.

(4) In all operations on the mastoid we should be most careful

not to expose the dura or the sinus, unless occasion requires it, for such practice has in some instances led to meningitis, and when the sinus has been accidentally opened septic thrombosis has followed.

(5) In operations for sigmoid sinus thrombosis it is often unnecessary and dangerous to excise the internal jugular vein at the same time, especially in the case of children, for the longer the time the little patient is under the anæsthetic the more gravé becomes the prognosis. If the operation is performed early and the clot has not begun to disintegrate, it is generally unnecessary to ligate and excise the internal jugular vein even if we do not secure a flow of blood from the bulbar end. In such cases it is wiser to postpone further operative interference for at least twenty-four hours.

REFERENCES.

- (1) *American Journal of the Medical Sciences*, January, 1905.
- (2) *German Medical Society Archives of Otology*, No. 6, 1905.
- (3) *American Journal of the Medical Sciences*, January, 1905.

DISCUSSION.

Dr. GEORGE L. RICHARDS (Leicester, Mass.) was in hearty accord with Dr. Bacon, especially as regards the frequent possibility of avoiding a mastoid operation in young children. In this connection he wanted to mention the use of $\frac{1}{10}$ -gr. granules of calcium sulphide, given hourly, until there was some odour of the sulphur in the breath or sweat, then less often. He had found this remedy apparently help in the process of recovery, a previous free incision of the drum membrane having been made.

Dr. W. PEYRE PORCHER (Charleston, South Carolina) pointed out the great advantage of conservatism and the advisability of investigating the etiology of ear disease more carefully. Many cases were due to and dependent upon nasal obstruction.

Dr. J. A. STUCKY (Lexington, Kentucky) said that the extreme temperature referred to was not due entirely to the inflammatory condition of the ear, but often to intestinal toxæmia, caused primarily by the locking up of the secretory and excretory functions as a result of the violent pain in the ear. Free purgation and flushing of the colon, in addition to free myringotomy, often acted as if by magic. The artificial leech and Leiter's coil were to be used with extreme caution, especially the latter. He might also mention the danger in using the syringe of lowering the vitality of the parts, and of conveying new infectious material into the delicate and susceptible middle ear; in this way the simple trouble might be converted into a serious mixed infection. This danger should be impressed upon the general practitioner, who usually first saw these cases and exhausted the so-called conservative treatment before he brought the case to the otologist. It should be made clear that the most conservative treatment was often early surgical interference.

Dr. S. MACCUEEN SMITH (Philadelphia) thought that those of them charged with the teaching of students should be moderate in advising

radical measures, at least, not until simpler ones had failed. Early free incision of the membrana tympani was most important in all acute cases complicating the infectious diseases. Simple puncture of the membrane should never be attempted, as it could not provide ample drainage.

Dr. JAS. F. MCKERNON (New York) said that the extract from his former paper quoted by Dr. Bacon might make it appear that his method of treatment had changed since the writing of that paper; but, if it were read fully, he thought that it quite coincided with his present attitude. In the bulb cases referred to thirty-four had been reported to him since the reading of the paper.

Dr. EDWARD J. BERNSTEIN (Kalamazoo, Michigan) asked what effect the use of chloroform and hot-water irrigation, according to the views of Sir Victor Horsley, would have upon the radical mastoid operation, more especially when one felt it would be necessary to ligate the jugular.

Dr. HENRY SMURTHWAITE (Newcastle-on-Tyne) said that the greatest percentage of cases that came under their notice was of the chronic class, and that it would never have reached such proportions had systematic and thorough treatment been adopted at the inception. If statistics were taken of deaths directly attributable to untreated and unrecognised (by the patient) middle-ear disease, the number would be considerable. He himself knew of three cases of deaths that occurred in one week due to cerebral and cerebellar abscess, in which the parents had no idea that an ear discharge had been present. It was among the poor that most of the fatal cases occurred, for the simple reason that running ears were looked upon as of little danger, and were not attended to unless pain were present. If the poor were instructed to have their children's ears attended to on the first appearance of a discharge the death roll would be reduced. In the acute cases it was far better to make a big incision in the drum and let out pus early than to allow it to burst through. Incision favoured early healing and lessened the risk of destruction, permanent thickening of the lining membrane, and consequent impairment of hearing.

Mr. HUGH E. JONES (Liverpool) said that it was much better to open the mastoid cells, or even the antrum, in acute suppurative otitis too soon and too often, than too late. The immediate cessation of discharge through the tympanum and rapid resolution gave better results as to hearing. A fallacious resolution of the mastoid sometimes occurred, leaving foci of infection in deep cells which broke out again, possibly into the groove of the sinus, six or twelve months later. In chronic cases one often found that the removal of a well-formed polypus led to a rapid cicatrization of the tympanum. The question of latent abscess having been raised, the speaker remarked that he had for years insisted upon the fact that many cases of latent brain abscess were walking about, and he had sought himself and had asked others in vain for a crucial clinical test for this condition. He thought the danger of opening the actual sigmoid sinus accidentally during mastoid operation had been exaggerated. In an experience of about five hundred mastoid operations he had often opened the bony groove accidentally, but never the sinus itself.

Dr. HERBERT TILLEY (London) wished to refer to two cases recently under his care which showed how impossible it was to lay down any general rule for the treatment of the graver complications of suppurative otorrhœa.

Case 1 was that of a female, aged twenty-one, who for five weeks had suffered from right suppurative otorrhœa following influenza. It was stated that she had had three shivering fits before admission to the hospital and constant attacks of

severe headache. Upon admission she was anæmic, and looked very-ill. Mentally she was in a drowsy condition. Pulse 72; respirations 13 per minute; temperature, 102°. Well-marked optic neuritis in right eye, the pupil of which was dilated and did not react to accommodation. No other paralysis noticed. There was slight pain on pressure on the right mastoid, but no signs of acute inflammation in this region, nor in the region of neck corresponding to situation of jugular vein. The mastoid antrum and cells were exposed, and also the lateral sinus; only healthy blood escaped from the latter. There was a small quantity of pus in the antrum, but the roof of the tympanum and antrum seemed quite healthy. The temporo-sphenoidal lobe was exposed and bulged very much through the large opening (2 in. by 1 in.) made in the bone above the bony meatus. Pus was sought for in five directions, but without success, and the wounds were stitched up with the exception of the post-aural mastoid incision, into which a large drainage-tube was fixed. The patient rapidly recovered, and without a bad symptom. The rapid disappearance of the optic neuritis was especially noticeable.

In such a case it was difficult to say what was the cause of the patient's symptoms, but it would seem probable that the temporo-sphenoidal lobe had been infected by way of the lymphatics from the middle ear, and that the operation at least relieved tension, and possibly was the means of affording an outlet for septic micro-organisms. It was indeed a rare type of case, but a similar one had been described before the Neurological Society of London.

Case 2.—The patient was a schoolboy, aged seventeen. Six weeks after the onset of influenza he was seen by the speaker on account of a temperature which rose every evening to 101° or 102° F., and there was a purulent otorrhœa of three weeks' duration accompanied by slight earache. When examined, the patient seemed in good spirits, and there were no signs of any mastoid involvement. The drum membrane was congested, perforated in the lower posterior quadrant, and the deep posterior meatal wall was not swollen. It was decided to keep the patient in bed and administer aperients—salicylates, etc. After an interval of forty-eight hours a rigor occurred (temperature 105° F.), and the speaker opened the mastoid antrum, the mastoid cells, and exposed the groove of the lateral sinus. There were about 2 minims of pus in the antrum, and the neighbouring cells were inflamed, but the rest of the bone was hard, pale, and healthy. Five hours after the operation a second rigor occurred, and an examination by Dr. Colbeck and Mr. Ballance failed to ascertain the cause of rigor. An interval of two days followed, when a third and fourth rigor occurred. During this time the mastoid wound appeared healthy, there was nothing to indicate involvement of the lateral sinus, and the patient's general condition was excellent. After the second rigor frequent injections of antistreptococcal serum were made, and after the fourth rigor the patient rapidly improved and made a speedy convalescence.

Such cases as these taught them the uselessness of trying to lay down hard-and-fast rules as to when a mastoid antrum should be opened, or an internal jugular ligated, or when this or that treatment was indicated. General principles there must always be, but that surgeon would be most successful who was untrammelled by rules and was guided only by his experience and the demands made by the symptoms of the individual case which was before him.

Dr. CLARENCE J. BLAKE (Boston) was in accord with Dr. Bacon and with the emphasis laid by the last speaker upon the importance of dealing with each case on the basis of its individuality. Accidental wounding of the lateral sinus might be met by rapid enlargement of the opening in the inner mastoid wall. The lateral brain-pressure crowded the vein into the enlarged opening, stopped hæmorrhage by pressure, and safeguarded the vessel.

The PRESIDENT expressed his sympathy with the conservative ideal. It was said of one great surgeon that he never wasted a word, a drop of ink, or a drop of blood. One operation in aural surgery which could

hardly be done too early, and which was often postponed too long, was the opening of the mastoid cells in acute suppurative otitis. It was essentially conservative, and had saved many tympanic apparatuses which would otherwise have remained crippled for hearing purposes and a source of the dangerous sequelæ incident to chronic suppuration of the middle ear.

REPLY.

Dr. GORHAM BACON, in reply, said he was glad to find there was not much opposition to the statements contained in his paper. He felt that Dr. McKernon and he were quite in accord in regard to excision of the internal jugular vein. He went farther than Dr. McKernon in waiting twenty-four hours after removing the clot (one that had not begun to disintegrate) before ligating or excising the vein, to see if the patient had any further symptoms of sepsis. Dr. McKernon said that in weak children he waited before ligating the vein. In a certain number of cases where the typical operation was performed early, and the internal jugular vein was excised, the patient died. The cause of death was not given, but he believed it was the shock of the operation, and for that reason he thought that they should not resort to ligation and excision of the vein unless absolutely necessary; he had therefore been advocating conservative methods for some years. Dr. Richards had referred to sulphide of calcium in suppurative cases. The late Dr. Sexton advocated its use, and the speaker had given it for a time, but did not feel that its administration was followed by any especial benefit, particularly after the *grippe* made its appearance. As to the remarks made by one of the speakers about the number of chronic cases seen in hospital practice, he was compelled, owing to the time limit, to omit what he had written on some statistics. In private practice he had seen only one intra-cranial complication following chronic otorrhœa during a period of twenty-five years. So that among private patients he felt that such a danger was a slight one. Most statistics were compiled from hospital cases, and among them they got their intra-cranial complications. He had seen a case similar to that reported by Dr. Tilley. The patient had had *grippe* and a mastoid operation had been performed, but he seemed to become very stupid, had a temperature, and respiration was as low as 8. The speaker opened the cranial cavity, explored the temporo-sphenoidal lobe, the cerebellum, and sigmoid sinus and found nothing. In a few hours the patient began to improve and recovered. He thought that the local depletion very likely relieved the congestion in a commencing meningitis. He wished to thank the President and the members of the Section for the privilege of having been allowed to read his paper.

THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.—The annual meeting will be held at 4 p.m. on Monday, December 3. The annual dinner will take place the same evening at 7.45 p.m. for 8 o'clock at the Trocadero Restaurant.

SOME UNUSUAL CASES OF FRONTAL SINUS SUPPURATION.¹

By PERCY G. GOLDSMITH, M.D.,
Belleville, Ontario.

THE object of the paper is to produce a discussion on the management of frontal sinus cases in which some unusual feature presents itself. A series of cases are detailed which show some of the difficulties and complications which one may meet, and the means which may be employed to secure fairly good results.

Frontal sinus suppuration is not infrequently seen by the general practitioner, and overlooked, since the patient may complain simply of an inflamed eye, a nasal discharge, or what is at first thought to be supra-orbital neuralgia. Severe head colds lasting longer than usual and associated with severe frontal headache and constitutional disturbance should excite suspicion of ethmoidal or frontal sinus empyema. Morphine seems to have little power in these cases. Measures directed to insure free drainage in the middle meatal region alone give prompt relief.

Frontal sinus disease is generally accompanied by antral suppuration. The antrum in many cases acts as a reservoir for the secretion from above. In cases in which the antral suppuration is due to the sinus above lavage through the inferior meatus of the nose, performed only a few times, may be all that is necessary to cure the suppuration here; of course, the frontal or ethmoidal disease must also be attended to.

Post-nasal discharge—a symptom very commonly complained of in this country—may be due entirely to purulent secretion flowing from the frontal sinus. The ill-health which in not a few cases is so marked as to make one think of tuberculosis wonderfully improves by measures directed to check the auto-intoxication.

Some case notes will, I hope, be of interest to you and may bring to your minds cases of your own in which there was some unusual or important feature that will teach us something regarding the management of these cases. It is the unusual case or the complications associated with this disease that give us the greatest difficulty; and if we write or speak of our difficulties and failures it will not only make us better for having done so but will make every operator more at ease when similar cases come his way.

¹ Communicated to the Section of Laryngology and Otology, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

CASE 1.—A lady, aged twenty-one, consulted me regarding a post-nasal discharge, or, using her own expression, "a dropping in the back of the throat." I cite this case because the symptoms are those which a large proportion of my patients complain of. The condition was of some years' duration and had not been influenced by anterior and posterior nasal sprays. Every winter for the last few years whenever she caught cold it seemed to settle in and about the eye. When accompanied by a head cold very marked frontal pain ensued. Anteriorly could be seen a very marked enlargement of the anterior end of the middle turbinated body and a few small polypi bathed in thick creamy pus in the middle meatus. Posteriorly a large quantity of creamy pus flowed over the extremities of the turbinates. The anterior end of the middle turbinal was removed as a preliminary. On seeing the patient after a few days she informed me that her complaint had been entirely cured, but there was now a very disgusting discharge from the nostril, something she had never had before I operated. It was only after a good deal of talking that I was able to convince her that it was the same discharge flowing in a different direction. The antrum was washed through an opening made beneath the inferior turbinal and a large amount of very offensive pus was found. The frontal cavity was irrigated intra-nasally for several weeks, when the discharge stopped. No further irrigation or treatment was used for the antrum, which evidently had been filled from the sinus above.

CASE 2.—Lady, aged thirty-three. This patient had been a sufferer from what appeared to be supra-orbital neuralgia and nasal discharge. For many months, at eleven o'clock each morning, with very marked regularity, she had a severe attack of pain in the forehead. The pain would nearly drive her wild, necessitating her going to bed for several hours. Morphine in large doses gave almost no relief. Both frontal and maxillary sinuses were quite dark on transillumination. The floor of the left sinus was exceedingly tender, but not bulging. A polypoid condition existed in both meatal regions. The unusual feature about this case was in the progress of healing after an external operation on the frontal sinus. The left frontal and left antrum were operated upon at one time. The temperature at the time of operation was 103°. Pus under pressure was found in the frontal sinus. This cavity was very large, extending quite to the outer end of the orbital ridge.

The patient was much better for the next two days, the temperature ranging from 99° F. to 100° F. On the third day she developed a temperature of 103° F., and at night 104° F., accompanied by marked distress in the head. The packing was removed from the wound, permitting a free flow of pus and giving immediate ease. It was now quite plain that I had missed some offshoot from the sinus, though I felt quite safe after the first operation. On mopping the cavity dry I noticed pus coming from above through a very small opening, into which a fine probe passed a considerable way towards the junction of the front part of the forehead and the scalp. A general anæsthetic having again been administered, I laid open this cavity. It was quite large, and made with the sinus proper an L-shaped figure. Everything now progressed quite nicely, and when the granulations had almost closed the external wound a reinfection of the cavity took place. At first I suspected that the dressings might be at fault, so I asked the patient to again come to me. The source of infection was then found to be an acute exacerbation of the disease in the other sinus, there being a small perforation in the septum between the two cavities. The other sinus was then operated upon, and without any unusual features both healed promptly. In the first sinus, at the junction of the two lines forming the L, there was a very marked disfigurement. I was unable to make any improvement by using a paraffin syringe, as the skin constantly gave way. I therefore adopted Paget's method of dissecting up a large flap consisting of the

entire scar and tissues over the bone, and then plastering the depression with solid paraffin and suturing the flap in place. The cosmetic effect was excellent.

CASE 3.—A case of pan-sinusitis in a woman aged sixty-four, all the sinuses undergoing radical operation and complicated with a severe attack of facial erysipelas which infected the antrum, pharynx, and larynx, but not the unpacked frontal sinus.

This heading contains practically all I have to say regarding this case. The cellulitis began twelve hours following the external operation on the frontal sinus. The attack was exceedingly severe, and the constitutional disturbance was very marked. Antistreptococcic serum was freely used, but did not appear to have any beneficial effect. The temperature was invariably higher for a few hours after the injection. The sinus packing was kept wet with a 25 per cent. solution of argyrol, and was not removed for two weeks, as I feared to expose the venous channels in the temporal bone to such virulent injection. Ultimately the case did fairly well, though the injected antrum never became perfectly clean, and some ethmoidal disease was not eradicated. The sphenoidal sinuses were not very thoroughly cleaned out, as the age and constitutional condition of my patient seemed to me to call for milder measures.

Permit me here to remark that I have very great difficulty in curing the ethmoiditis in all these cases. Killian's operation on the frontal sinus makes exposure of the ethmoid more perfect; still, I feel I do not have that degree of success with suppuration in these cells that my reading makes me think others have.

CASE 4.—A case of frontal sinusitis, orbital phlegmon, and displacement of the eyeball downward and outward, due to a primary sarcoma in the right nasal fossa. (Reported at Canadian Medical Association in Ottawa.)

In this case the only complaint my patient made was diplopia and a swelling of the eyelid, as if stung by some insect. The pus was evacuated in the orbit, and after clearing out the nose of a large mass of sarcomatous material, free vent was given to the pus in the frontal sinus. The patient was made quite comfortable for some months, but within a year died of secondary involvement in the liver.

There is also a class of cases which causes me a great deal of worry as to the ultimate outcome and in which a deflected septum appears to be the cause. The after-treatment is here made easier by the use of Killian's specula, but even then I experience great difficulty in reaching all the diseased tissues. I feel sure one is not justified in correcting any septal deviation in the presence of suppurative accessory sinus disease.

CASE 5.—A case showing the intimate relationship existing between the eye and frontal sinus. A man, aged forty-one, complained of having caught a very severe head cold which caused him very great distress in his eye. Apparently he was suffering from a severe attack of conjunctivitis with iritis. The eyeball was tender, tension quite full but not + 1, conjunctiva intensely injected, and iris somewhat muddy and reacting feebly. There was but very slight tenderness in the floor of the frontal sinus. Intra-nasally was seen a deflected septum which, when straightened by Killian's long speculum, showed an enlarged middle turbinal pressed well against the bony septum. I was fortunately able to probe the

fronto-nasal duct quite easily, and while doing so was surprised to notice a little stream of muco-pus running along the probe. The patient was immediately much more comfortable, and by using menthol inhalations was rapidly well. The ocular condition rapidly subsided without treatment.

I wish here to mention a device which has served me well in clearing a sinus of its diseased membrane with the least injury to any healthy tissue. I refer to the use of felt or cloth burrs. Mayer and Meltzer have made for me felt burrs of various sizes, which, when attached to a dental engine, will facilitate very greatly the cleaning of the cavity, as well as assist very materially in checking the hæmorrhage. Stout linen wound around a large dental burr does very well indeed, and I have found it of very great service in cleaning the walls of the maxillary sinus and checking what is sometimes a very troublesome oozing.

In conclusion, I feel like apologising to you for taking up your time in presenting these few notes on cases which to me seem difficult and unusual, still to many or most of you may seem simple and commonplace. I cannot help thinking, however, that the status of the surgery of the accessory sinuses of the nose would be on a surer and more rational foundation if each of us would write rather of his failures and difficulties than of his success.

SOME CONSIDERATIONS UPON CERTAIN FACTORS IN THE DIAGNOSIS AND TREATMENT OF SUPPURATIVE LESIONS IN THE NASAL ACCESSORY SINUSES.¹

BY HERBERT TILLEY, B.S.LOND., F.R.C.S ENG.,

Surgeon, Department for Diseases of the Ear, Nose, and Throat, University College Hospital, London.

IN any meeting of experts it may be assumed that their views upon the broad aspect of any subject to which they have devoted attention will in the main be one of agreement and will differ only upon points of detail. There are many such differences of opinion and practice in connection with the subject of my paper, and some of these would quickly disappear if at such meetings as this we discussed the details of our experiences, and more especially those which include our failures and disappointments.

Assuming, then, that we are all conversant with the main facts

¹ Communicated to the Section of Laryngology and Otology, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

regarding the etiology, symptoms, diagnosis, and treatment of suppurative lesions of the nasal accessory cavities, I would like to present a few of my own experiences, and only ask you for yours in return. Obviously my communication must be a "thing of shreds and patches," but my object will be attained if I can in any way promote a discussion which will tend to clear up debatable issues and render the practice of our art more certain and successful.

MAXILLARY ANTRUM.

Etiology.

We are all aware that suppuration in this sinus may be caused by intra-nasal or dental infection, but opinions are greatly divided as to which is the more frequent etiological factor. If there be nothing in the history of the case to guide us, it will be difficult to be certain as to the cause of infection, because we are often consulted by the patient when the suppuration has become chronic, and he has forgotten details of initial symptoms. Furthermore, very carious teeth may be present, even though the infection be of intra-nasal origin.

It may be asked, "What difference from the point of view of prognosis and treatment will it make whether the infection be dental or intra-nasal?" From those who have much experience in the matter the reply will be immediately forthcoming that the prognosis and treatment are more satisfactory in cases of dental origin. Many of us must have frequently cured chronic antral suppuration of dental origin by simple alveolar drainage, and as often failed to relieve those of nasal origin by the same means.

From the point of view of diagnosis clinical experience in this matter would suggest that in an empyema of dental origin there is far less likelihood of finding swelling and hypertrophy of the uncinate process, or polypi in the middle meatus, than when the sinus is infected by the intra-nasal route. Again, when a diseased tooth is the cause of trouble, an injection of a warm weak antiseptic into the antrum will often produce aching of the offending tooth. This tooth, however, may not be obviously diseased—for example, the "crown" may appear to be perfectly healthy—but a pyorrhœa may affect one of the roots (specimen shown).

Diagnosis.

Puncture of the antrum is the easiest and only absolutely reliable test of antral suppuration. It can almost always be applied,

but on three occasions I have been unable to obtain any return of the injected fluid; this was found to be due to intra-antral polypi, which, by a valve-like action, blocked the natural ostium.

Pus in the middle meatus is a well-known sign of antral suppuration, and generally it is seen in the lower and hinder region of the meatus, but occasionally it is observed high up and anteriorly, and then suggests the presence of frontal sinus suppuration.

In one of my cases, where the antrum was alone infected, the position of the discharge in the anterior and higher regions of the meatus was due to a deviation of the septum, which forced the posterior half of the middle turbinal against the outer wall of the nose, and thus turned the discharge forwards. A large polypus in the posterior part of the meatus will produce the same result.

In such a case to diagnose the source of the discharge, the antrum, nasal cavity, and especially the middle meatus should be cleansed from all traces of pus. If the secretion be coming from the frontal sinus it would quickly reappear in the meatus, but many hours would have to elapse before it could overflow from the antrum if its origin were in this cavity.

Transillumination is of great aid in diagnosis, but its evidence is only of presumptive value. An antrum which transilluminates well is not in a state of chronic inflammation, but it may contain a cyst or a polypus. If it is opaque it may contain pus, but this can only be rendered certain by exploration. On the strength of opacity patients have been subjected to operative procedures which would have been unnecessary had a "denture" on the suspected side been removed before the lamp was placed within the mouth.

Treatment.

Alveolar drainage will be more likely to prove effectual as a mode of treatment in cases of dental origin if the disease has been present for a period of months rather than years.

I use a narrow, solid vulcanite plug, the milled surface of which prevents the plug from falling into the mouth.

Some form of radical operation will probably be required for the majority of chronic cases, whether of intra-nasal or dental origin, because of the degenerative changes which have taken place in the lining mucosa of the sinus.

When the uncinate process is much hypertrophied or polypi are present in the middle meatus a radical operation is practically always called for, and since such changes are more frequently

present in cases of intra-nasal origin, our dictum is tantamount to saying that the radical procedure is generally required to cure chronic cases where the source of infection has been by way of the nose.

When radical measures are called for I am accustomed to practise the Caldwell-Luc operation with the following modifications:

(1) The whole inner wall is removed, especially the upper membranous portion. The lower limit of the opening should be level with the floor of the nose, so that free drainage may take place. The lower anterior ethmoidal cells should be enretted at the same time because they are frequently infected, and if not dealt with an imperfect result will be attained.

(2) Only such of the mucous membrane as is diseased should be removed. If healthy mucous membrane be removed healing is much longer delayed, and considerable discharge from granulation-tissue will result.

(3) The bucco-antral wound must be sutured at the close of the operation. Omitting to do this in one case led to a bucco-antral fistula, which for months was an annoyance to the patient and a weariness to myself. Such fistulas are often very difficult to cure unless the wound be opened up and the track "freshened."

(4) No packing is introduced into the antrum. It is quite unnecessary, for it serves no useful purpose, and its removal is very painful to the patient. I have never seen œdema of the cheek since I ceased packing.

(5) The after-treatment consists of syringing the nasal cavities with warm antiseptic alkaline lotions for a period of three to five weeks following the operations.

On some six patients I have opened the maxillary sinus by way of the nasal cavity—that is, by removing the anterior half of the inferior turbinal and then making a large opening into the sinus. The method did not give me satisfaction, and seems contrary to general surgical principles; for I take it that when we are dealing with a chronic suppurating cavity it is the best practice to open it, examine the extent and situation of the disease, and then to deal thoroughly with it, taking care to provide, above all things, for free drainage.

ETHMOIDAL CELLS.

In my experience these small cavities are rarely the seat of suppurative inflammation, except in association with a similar con-

dition in the neighbouring sinuses. When they are alone affected the disease is usually limited to the cells contained in the middle turbinal or to the ethmoidal bulla.

FRONTAL SINUS SUPPURATION.

In difficult cases of pan-sinusitis the presence or absence of pus in the frontal sinus can generally be determined by exclusion—that is, by washing the antrum, middle meatus, and nasal cavities free from all pus, and then carefully examining the lower opening of the fronto-nasal canal.

In acute suppuration of the frontal sinus frequent irrigation of the cavity with warm, mild antiseptics is an excellent method of local treatment, and may be expected to hasten resolution and cure, but I have only known it cure one case in which the disease was of long standing. This failure on my part has not been due to want of patience or experience in the matter.

If the contour of the sinus be fairly regular, and the opening into the nose unobstructed, it is quite easy to understand that irrigation may be successful even in chronic cases, but so frequently the sinus extends into narrow bony recesses, that only a free opening of the cavity and thorough obliteration of these sinous tracts can effect a cure.

The location of pain over the situation of the sinus is no proof that disease is located there. The best results which in my hands have followed the opening of the sinus have been secured by a simplification of Killian's operation. The details are the same as his, with the important exception—namely, I do not remove the floor of the sinus. The diseased ethmoidal cells are thoroughly curetted through the opening below the bridge of bone, and the whole external wound sutured at the close of operation.

Only those who have much experience of the old "packing" operation and the weariness of the long weeks of after-treatment can have any idea of the relief it is to both patient and surgeon to be able to do without bandages at the end of a week, and to let the patient out of hospital. The after-treatment consists of daily irrigation of the sinus through the nose by way of the large communication made at the time of operation.

I have been told that the method courts disaster, and that fatal osteomyelitis of the frontal bone—that grim spectre of radical frontal sinus operations—will soon find me out.

With regard to this point, I would like to say that this compli-

cation in my own two cases (under the old method), and I suspect in those occurring in the practice of other surgeons, has been due to the fact that, while the frontal sinus has been efficiently dealt with, yet the fronto-ethmoidal and ethmoidal cells have not been removed at the time of operation, and have reinfected the higher sinus, and pus thus retained under tension has invaded the diploë of the frontal bone.

Since I have given special care to removing the ethmoidal cells I have had no cause to fear osteomyelitis, and I would strongly recommend the simplified Killian operation to your notice.

In other words, osteomyelitis of the frontal bone, following radical operations on the frontal sinus, is due to ethmoidal infection. Remove the diseased ethmoid cells at the time of operation and the bogey need not cause anxiety.

Sphenoidal Sinus.

In three cases deep-seated pain in an ear, otherwise normal, was a very definite symptom. Irrigation of the sinus with a warm lotion, or instillation of a few drops of peroxide of hydrogen solution, will sometimes induce the same symptom.

If the anterior sinus wall be exposed by means of Killian's long-bladed speculum, the pulsation of pus in the neighbourhood of the ostium is pathognomonic of sphenoidal sinus suppuration, and does not mean that the wall of the cavernous sinus is exposed within the sinus. A similar pulsation is often seen in the perforated drum of a chronic otorrhœa.

In operating upon the sinus it is a good maxim always to remove more of the anterior wall than seems necessary at the time of operation, because of the great tendency of the opening to contract.

Free drainage should be our desideratum; curetting the interior of the sinus is not necessary, and it may be very dangerous.

DISCUSSION.

(Dr. Goldsmith's and Dr. Tilley's paper's were discussed together.)

Dr. OTTO FREER (Chicago) wished to speak in defence of the intra-nasal operation of removal of a large portion of the nasal wall of the antrum of Highmore for the relief of its chronic suppuration. He had had six consecutive cases of chronic empyema of the maxillary antrum, with complete recovery in from three to four weeks, simply as a result of free drainage and ventilation of the cavity obtained in this manner, no curetting whatever having been done. The removal of the anterior two thirds of the inferior turbinated body, and the cutting away

with the trephine and burr of the nasal wall to the nasal floor below, into the middle meatus above, and back to near the posterior limits of the cavity made a large window that permitted some palpation with the little finger, and some inspection of the interior of the maxillary antrum. The intra-nasal operation was one that might be done under cocaine anæsthesia, was not painful, and was not nearly as severe a procedure as the Caldwell-Luc operation, which made a wound in the mouth, broke down the massive facial or buccal wall, and required general narcosis. As stated by Claoué and Rethi, and by himself in previous writings, the radical or Caldwell-Luc operation was always possible if the intra-nasal operation failed; the latter really formed its last step placed in advance.

Dr. C. G. COAKLEY (New York) said pain in the teeth was almost always complained of while irrigating an acutely inflamed antrum although the teeth might be unaffected. He urged the intra-nasal operation for chronic suppuration in the antrum before doing any radical operation, and only resorted to the latter in the event of failure of the intra-nasal drainage. Irrigation of the frontal sinuses ought not to be necessary if proper drainage were afforded either before or after a radical operation. He had not removed the floor of the frontal sinus for six months, and found a considerable saving in the time of operation, and, so far, no interference or delay in healing. Pain referred to the ear had been quite common in his cases of acute sphenoiditis.

Dr. HUNTER (Toronto) asked Dr. Goldsmith what he would do in a case of sphenoidal sinus disease when the septum prevented drainage. Would he remove the turbinals or resect the septum?

Dr. E. FLETCHER INGALS (Chicago) said the cases referred to by Dr. Goldsmith illustrated a class some of which would not be relieved by intra-nasal drainage alone. The last remark of Dr. Tilley, that "after all, drainage is what we attempt to secure," suggested the value of efficient intra-nasal drainage. From Dr. Coakley's statement and his own experience he thought that in 90 per cent. of all cases the frontal sinuses could be explored by the probe. In all cases in which this could be done he thought a free drainage canal could be safely established by the pilot burr that he had recommended. He believed that this operation was as safe as any other on the frontal sinus, and that in 90 per cent. of the cases in which it was done it would prove efficient. In the other 10 per cent. the radical operation spoken of by Dr. Tilley, or some similar procedure, would be needed.

Dr. HARRIS P. MOSHER (Boston) pointed out that the two questions they were trying to settle in regard to disease of the frontal sinus were: which operation would cure? and which would leave the least deformity? In his hands the Killian operation had given the more satisfactory results. From the anatomical standpoint it was best fitted to do so. It was capable of dealing with any problem of sinus disease, excluding, of course, the antrum. The chief objection to it was the possible deformity. That the operation was extensive and thorough were points to its credit. When he began to use this operation he expected marked deformity. He soon found, however, that in a sinus of moderate size it left no deformity, and he had been continually surprised to see how large a sinus could be operated upon after this method with no deformity resulting. In the last year he had operated on ten cases by this procedure. The three last were bilateral. He would pass round casts of five of these cases and a cast of a case done by the granulating method. One of the five cases he treated first by the granulating method. It showed very plainly one thing not to

do. The superciliary ridge in the first operation was practically cut through at the root of the nasal bone. One should leave as broad a strip of bone above the rim of the orbit as possible, and the long axis of the opening which is made in the anterior wall of the sinus should be horizontal and parallel with the rim of the orbit, not vertical or obliquely vertical. So far the only case of his done originally by the Killian method which presented deformity was one in which the long axis of the bony opening was obliquely vertical.

Dr. P. WATSON WILLIAMS (Bristol) spoke in reference to sphenoidal sinus disease. He emphasised the desirability of avoiding the removal of normal structures for diagnostic purposes as was often recommended. If the sphenoidal ostium could not be inspected, he punctured the anterior wall of the sinus in its lower portion with his sphenoidal sinus cutting forceps. The procedure was free from risk, unless unjustifiable force was used. The point of the instrument was blunt, so that injury to the small branch of the spheno-palatine artery was hardly possible, which was the only danger of entering the lower third of the sinus. A great advantage of this method was that the forceps were so devised as to avoid the necessity of removing any intra-nasal structures. In antral suppuration the diseased area was nearly always limited to the inner wall, so that the removal of the portion in and around the uncinate process and the lower ethmoidal cell was often sufficient for cure. If it failed, it was then easy to open through the canine fossa, inspect and remove the diseased areas that were discovered. He added that one should avoid removing more of the anterior wall than was necessary for inspection and the use of instruments.

Dr. STCLAIR THOMSON (London) congratulated Dr. Goldsmith on having placed his finger on two vital points—one the value of publishing their failures, and the other was the difficulty and dissatisfaction they had in complete eradication of ethmoidal suppuration. He was interested in hearing that Drs. Freer and Claoué did fewer Caldwell-Luc operations than they did a few years ago. Last year in Paris he (Dr. Thomson) found that this operation was also in many cases giving place to puncture and repeated irrigation. He had no hesitation in doing a submucous resection of the septum if required, even in the presence of acute or chronic sinusitis. In reference to earache Dr. Thomson would shortly publish a paper showing how misleading this symptom was in sphenoidal disease.

Dr. LOGAN TURNER (Edinburgh) wished to endorse Dr. Tilley's view that when performing a radical operation upon the maxillary sinus the surgeon should open the cavity through the canine fossa. As thorough a visual exploration of the sinus should be made as possible, and Dr. Turner was of the opinion that that could only be obtained by making a large opening through the anterior wall of the sinus. He did not consider that the necessary inspection could be made by any intra-nasal opening.

Dr. GEO. L. RICHARDS (Fall River, Massachusetts) wanted to record his agreement with the position taken by Dr. Freer and Dr. Coakley, namely, that the large majority of cases of antral suppuration could be treated by puncture through the naso-antral wall. If the opening were made large enough the drainage would be good and many patients could be taught to wash out the sinus through a curved cannula or large Eustachian catheter. He found himself doing the radical operation for maxillary sinus disease less often. The question of cure by the intra-

nasal route depended not so much on how long the purulent process had lasted as upon the character of the lining mucosa. If degenerated and filled with polypi intra-nasal treatment would probably fail. In otherwise uncomplicated primary purulent inflammation of the antrum of nasal origin, nasal treatment, provided the opening through the naso-antral wall were large enough, should be successful.

The PRESIDENT considered that the debate showed that the true attitude was one of eclecticism in the selection of pure rhinological or external methods. He was himself in favour of the treatment of rhinological conditions by rhinological methods, but this principle should not be pushed too far. He thought the difficulty expressed by Dr. Logan Turner was met by explaining to the patient that the less radical operation might require to be followed by the more radical one. He (the President) had more than once had occasion to wish he had operated more radically, but he was sure he had in many instances been able by intra-nasal methods to obviate the necessity for external operation. He saw signs of a growing tendency towards the rhinological methods. He reminded the Section of the certain damage to the teeth in children in opening the antrum freely by the canine fossa. He exhibited some curved bougies for the dilatation of the infundibulum which, combined with the use of Sondermann's suction apparatus (also exhibited), he had found of value in the treatment of frontal sinusitis.

REPLY.

Dr. PERRY GOLDSMITH, in reply, said that the method of exclusion referred to by Dr. Tilley might fail in those cases in which the frontal sinus had emptied itself shortly before examination. He thought they should be sure that sinus mischief did not demand immediate attention before they did any major operation on the septum.

TWO CASES OF ABDUCTOR PARALYSIS.¹

BY GEORGE L. RICHARDS, M.D.,
Fall River, Massachusetts.

CASES of abductor paralysis are of sufficient rarity to warrant the reporting of each one, so that whatever light the individual case may possibly throw on the general subject may be at the command of laryngologists in general. Like very much of the material reported in medical literature, my cases are more or less incomplete so far as their etiology is concerned, nor can I give their accurate pathology. One of them, at least, is somewhat unusual as regards the age of the patient. I have made no systematic search of the literature, but in a paper by Wilson, published in the *Laryngoscope*

¹ Communicated to the Section of Laryngology and Otology, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906

of September, 1900, he refers to some eighty-eight cases which he has found in literature, and some thirty which had been reported to him by letter, making a total of 118 up to that time. The history of these cases shows that the mortality is very great and that measures for relief, other than tracheotomy, appear to have been futile, although cases are reported in which the electrical treatment has seemed to have done a certain amount of good.

The recurrent nerve is peculiar in that it contains both abductor and adductor fibres. The abductor fibres seem to be fewer in number, and relatively weaker than the adductor; and in the presence of trouble with the abductors, the adductor fibres seem, if anything, to get more strength.

(1) My first case was an unmarried woman, aged forty, a cotton mill operative, who consulted me on January 24, 1903, with a history of a cough since the preceding May. The cough was a peculiar, sharp, barking one, coming almost paroxysmally, and accompanied by but little secretion. On examining the larynx the cords were found to be in active motion, and during the latter part of each inspiration came together until they almost met in the centre line. The respiration was stridulous in character, and the case seemed to be one of partial abductor paralysis. Electricity was used, and remedies for the cough, with apparently a little improvement, and on February 3 examination seemed to show that the degree of adduction was hardly sufficient for true abductor paralysis. Ten days later the paresis became more evident and at that time seemed to admit of no doubt whatever as to its being a case of double abductor paralysis. During expiration the glottis widely opened, but before the inspiration was half through the cords came together so as to almost entirely close up the chink. Five days later the dyspnoea had increased to such an extent and the breathing was so laboured that there was imminent danger of suffocation. The cords at this time were found to come so absolutely together toward the end of inspiration that only the narrowest chink was left. Tracheotomy was performed with relief of the difficulty in breathing, but the bronchitis, which had been co-existent, seemed to increase in severity, and five or six days after the tracheotomy was performed purulent broncho-pneumonia supervened, with resulting death.

No autopsy was permitted, so that it is impossible to say what the true lesion was and whether it was central in character or not. It has always seemed to me that it was probably central in character.

(2) My second case is the more unusual, because it occurred in a child, a little girl, aged two and a half, who had never had any sickness excepting measles. On April 19 of this year, while playing, a large rooster knocked her down and picked her on the mouth. She was frightened and ran home crying. That evening, while eating fish, she started to cry and then lost her voice for the moment and could not speak. After that she talked hoarsely. The same night breathing became difficult. She was at times a little better, but never complained of any pain; deglutition was normal, and the voice almost so. Six days later I made an examination with the finger, but found nothing suggestive of a foreign body. The

child seemed suffering from inspiratory dyspnœa. Some three weeks later the child was brought to my office with the history that she had kept on playing, for the most part talking rather low and with the lips, but loudly whenever frightened or when she saw anything strange. She had been taken out of doors one windy day about two weeks previous, and ever since had breathed harder and harder. She had eaten very little for the last two weeks. Although previously a healthy child, she was now very much emaciated and every inspiration was dyspnœic in character. Attempts to get a good view of the cords failing, she was given chloroform to complete anæsthesia. Inspiration then showed both cords to come sharply together at the beginning of inspiration and to remain in this position, there being nothing but the very narrowest chink just in front of the arytenoid cartilages. As the child was somewhat cyanosed and the dyspnœa very urgent, she was taken at once to the Union Hospital and tracheotomy performed on June 1. Since then she has grown fat. She has breathed continually through the tracheotomy tube, and whenever it is removed the attacks of dyspnœa seem just as before. The cry is harsh with the tube removed, but the child cannot be induced to attempt to talk except in a whisper.

On August 17 she was examined at the Throat Department of the Massachusetts General Hospital in Boston by Dr. D. Crosby Greene, jun., who confirmed the diagnosis of double abductor paralysis. The sudden onset of the attack, the freedom of respiration since, the absence of marked hoarseness, to our mind absolutely rules papilloma out of question.¹

As to treatment, it seems to me that strychnine, arsenic, electricity, etc., may be used, but it is a question whether they will do much, if any, good. I have tried faradism and strychnine, but as yet they are of no avail. I shall try other remedies, but it is probable that the condition will last for a varying length of time. I have hopes that eventually, with the growth and development of the child, the conditions demanding tracheotomy will entirely disappear and recovery take place.

The etiology here is somewhat curious. A succession of frights seems to be the real cause, as I do not think that at any time there was anything suggestive of a foreign body, although the coughing following the eating of fish is always suggestive of a fish-bone. What the pathology here is I am unable to state. It would seem to me to be central in nature rather than peripheral, and to be one of those inexplicable conditions in which, through the influence of the central nervous system, distinct interference in function of parts supplied by peripheral nerves takes place.

DISCUSSION.

Dr. CHEVALIER JACKSON (Pittsburg, Pennsylvania) said that he had two cases still under observation, both men in middle life, who were tracheotomised two and six years ago respectively. Both had been gone over by internists and neurologists, but absolutely no lesion could be

¹ A further note on this case will appear in our next issue.

located. He further referred to some blood-pressure work done on his cases by Dr. John W. Boyce, which demonstrated that manipulation of the upper end of the œsophagus, as in bronchoscopy, was associated with profound shock. This should be forestalled. Further, he had found that general anæsthesia in abductor paralysis usually ended in a stabbing tracheotomy. In his opinion it was better to do a preliminary tracheotomy under local anæsthesia.

A DISCUSSION ON THE INDICATIONS FOR THE LIGATION OF THE INTERNAL JUGULAR VEIN IN OTITIC PYÆMIA.¹

INTRODUCTORY PAPER.

BY HUGH E. JONES, M.R.C.S., L.R.C.P.,

Honorary Surgeon Liverpool Eye and Ear Infirmary, Ophthalmic and Aural Surgeon to the Royal Albert Edward Infirmary, Wigan, and to the St. Helen's Hospital.

WHEN our President asked me to open this discussion, I accepted the invitation with very mixed feelings. While deeply grateful to you, sir, for the honour you conferred upon me, I was conscious of the difficulty of the task which that honour carried with it. When I thought of all the papers that had been written on the subject and the many great names associated with it, I found it difficult to imagine that my small experience could add to the general knowledge anything worthy of the occasion. The fact that you, sir, had recently read a most thoughtful and critical paper before the Otological Society of the United Kingdom—a paper in which you stated lucidly and temperately the case against ligation of the internal jugular vein—in one way added to my difficulties, but in another way had been a great help to me. To a certain extent and in one sense I have taken that paper as my text, or—shall I say—as the lesson for the day. It has been the habit of many writers almost to ignore the arguments advanced by Macewen, Brieger, and others against wholesale ligation of the vein, but however strongly one may adhere to the principles laid down by Zaufal, Horsley, and Ballance, the facts as marshalled in your paper compel our attention and your conclusions call for our careful consideration.

SCOPE OF THE DISCUSSION.

In the great majority of cases otitic pyæmia (and I take the

¹ Communicated to the Section of Laryngology and Otology, at the Annual Meeting of the British Medical Association, held in Toronto, August, 1906.

expression to include septic intoxication and septicaemia of otitic origin) is caused by the infection of one or other of the sinuses grooving the temporal bone or of the bulb of the jugular vein, with or without preliminary occlusion by a thrombus; but a few cases of septicaemia and even pyaemia arise without evident involvement of the sinuses, or, as in a case I shall relate, without any indication of bone disease.

While, therefore, it is mainly with septic infection of the sinuses and internal jugular vein that this discussion is concerned, I trust that the exceptional cases referred to will also receive a share of attention. The title of the discussion leaves the exact meaning of "ligation" open. I doubt if anyone would think nowadays of tying the vein without at the same time dealing effectively with the disease in the temporal bone and lateral sinus, but there may be great difference of opinion as to the extent of the interference required and the order in which the various stages of the operation are to be taken. I think these questions may be said to come within the scope of the discussion.

The one thing certain which cannot be disputed is that the first essential in the treatment of otitic pyaemia is the rapid and complete eradication, so far as that is possible, of the primary focus in the temporal bone and of the secondary focus (if there is one) in the sinuses or vein, without at the same time accidentally causing a spread of the infection.

Even the surgeons who most object to wholesale "ligation" admit that cases do occur in which the secondary disease in the sinus and vein cannot be removed or its dissemination prevented without making ligation a part of the operation.

The questions we are asking ourselves to-day may be formulated as follows:

(1) Is ligation of the internal jugular vein in itself or in its consequences a dangerous operation, and if so, do its dangers ever outweigh those of leaving the vein untied?

(2) Under what circumstances and local conditions is it possible or impossible to determine whether the whole of the primary and secondary local foci can be removed and the further dissemination of the disease prevented without ligation of the vein?

(3) What method of procedure best overcomes the risks of the operation itself and of the disease?

(4) Under what conditions (if any) is it necessary or advisable to tie the vein before operating on the temporal bone and lateral sinus?

Before trying to answer these questions let us consider for a moment the comparative value of the evidence at our disposal.

(a) Anatomical and physiological facts are obviously of first-class importance. The whole plan of treatment is suggested as well as made necessary by the anatomical facts. Moreover, within the natural limits of variation the facts are constant and to be depended upon.

(b) Clinical evidence is not so satisfactory; it is not always easy to say at what precise moment or spot particular pathological changes occur; similar changes in widely-separated parts may produce similar general symptoms and give little or no local signs—for example, clotting in the various sinuses or veins, disintegration of the clot at various points, or mural extensions of the disease in different directions.

(c) This difficulty is overcome by operation in proportion to the completeness of the operation performed. Intervention limited to the lateral sinus leaves much room for speculation; the complete operation clears up many doubts.

(d) *Post-mortem* evidence is to some extent vitiated by changes which have occurred before operation, but will generally show whether the fatal extension took place backwards along the lateral sinus, downwards along the jugular vein, or along the collateral veins, or whether death was due to some coincident intra-cranial suppuration.

(e) Mere comparative statistics based on the results of operations with and without ligation are of little value, because the cases which are admitted by all to require ligation are those in which the disease was either of a much severer type or had been longer in existence before operation.

Reverting to my first question—(1) Is ligation in itself or in its consequences a dangerous operation? etc.—the objections which have been urged against the operation are:

(i) That ligation of the vein is positively dangerous on account of its interference with the collateral circulation—that is, with the escape of intra-cranial blood by the posterior condylar vein, the inferior petrosal sinus, and the facial anastomosis. It is undoubtedly the fact that one sinus is generally larger than the other, and it may be conceded that if the vein be tied low down on that side, when the opposite sinus is extremely small there is a danger of cerebral œdema. But how often does this extreme variation happen? Does it constitute a greater risk than, let us say, the possibility of a dangerous variation in the course of the carotid in

relation to the tonsil? Excision of the tonsil is rarely an urgent life-saving operation, but the possible risk mentioned is never allowed to interfere with that operation even when it is a matter of mere expediency.

(ii) That when the clot is limited to the lateral sinus, the posterior condylar vein and the inferior petrosal being supposed patent, ligation of the inferior jugular vein causes a flow of blood from the inferior petrosal sinus to the condylar vein, carrying with it septic material into the vertebral vein; furthermore, that under the above conditions aspiration of the bulb may take place through the agency of the vertebral vein.

It may be well at this point to consider, and if necessary to revise, our ideas of the anatomy of the lower end of the lateral sinus, the bulb, etc. The posterior condylar vein leaves the sinus at right angles, where the latter forms a semicircular recess before it becomes constricted and turns down through the jugular foramen. At the foramen the great vessel is compressed to its smallest dimensions. The opening into the bulb is almost valvular, and a slight downward pressure on the dura above or behind it is enough to close it. At this point, too, I have found two or three fine septa stretched across the opening like a grating.

It is probable, therefore, that clotting, whether it begins in the bulb or in the sinus, is stayed at this point for an appreciable time, and in many cases permanently arrested. Before clotting extends into the bulb the condylar vein will be occluded, and this probably occurs comparatively early in most cases of sinus thrombosis without the help of pathological or artificial occlusion of the vertebral jugular vein.

There is in some sinuses a constriction external to the jugular fossa. Exceptionally, the clotting may be stayed at this first constriction, in which case the posterior condylar would remain free a little longer.

These constrictions form a natural division of cases according to the place of primary infection. The barrier forms the lower limit for a time of the clotting arising from infection of the inferior petrosal sinus, the saccus endolymphaticus, the petrosquamosal vein, and the common form of infection of the sigmoid, and the upper limit of the clot in primary infection of the "bulb."

The inferior petrosal sinus does not open directly into the upper part of the bulb, as might be supposed from schematic drawings, but passes down obliquely through the anterior section of the

jugular foramen, separated from the greater vessel by the nerves (9, 10, 11), and joins the interior jugular vein at the lower margin of the bulb, or slightly lower by a slit-like and possibly valvular opening. Assuming that the blood is still fluid, or that the septic clot has become disintegrated, and that the sinus has been plugged, then ligation of the vein without resection or opening of its upper division would certainly cause stasis in the bulb, petrosal sinus, and in the condylar vein, but I cannot believe that a reverse current would be set up either in the direction of the vertebral, or towards the cavernous, sinus. Pulmonary aspiration of the sinus by the vertebral vein must be a difficult matter to demonstrate, and I confess to being sceptical on this point. That extension of the septic processes into the posterior condylar and the inferior petrosal often occurs has been proved by many *post-mortem* examinations in cases where no operation has been performed on the vein; so that there is no need to invoke reversal of the current or aspiration in explanation of the fact.

(iii) That the danger from the wound infection is serious. I have never seen serious infection from outside, but in a young child under my care suppuration took place in the track of the great vessels, apparently owing to infection from the divided end of the vein, which ultimately led to perforation of the trachea and septic pneumonia. An occurrence of that kind, however, only shows the extreme virulence of the poison which the operation was an attempt to combat.

These are the principal objections against tying the vein. Against them may be set the following considerations:

(a) If the lateral sinus is firmly closed down by a clot, the clotting in all probability extends to the posterior condylar vein; ligation then closes the larger avenue of two remaining ones and permits removing of the whole clot without serious risk.

(b) If there is a permeable infected lateral sinus or bulb, the extent of the mural infection is not ascertainable by operation on the sinus alone, and it is absolutely imperative that the clotting should be encouraged in the whole area in order that the disease may be dealt with radically.

(iv) The last objection—namely, that in many cases the operation is unnecessary, together with the second part of this question, “Do the dangers of tying the vein ever outweigh those of leaving it untied?”—may be left for consideration in the reply to the next question, namely:

Question (2): Under what circumstances and local conditions is

it possible or impossible to determine whether the whole of the primary and secondary local foci (when the latter exist) can be removed and the further dissemination of the disease prevented without ligation of the vein?

The best way of answering this question I think is to relate briefly some illustrative cases.

(1) The first is one of pyæmia without implication of the sinuses or veins. One of my own colleagues was the patient. The attack began with a sore throat, the soft palate being more particularly affected. The same night acute pain was felt in the right ear, and next morning a discharge of serum from that ear afforded some relief. The same evening, the pain having increased again, I was asked to puncture the membrana tympani. This I did without a general anæsthetic, the incision in consequence being a small one. For the next six days I was away from home. During that time the temperature varied from 99° to 101° F. On the fifth day of the illness three slight attacks of shivering (lasting three minutes each) occurred. On returning home I found my friend feverish, with dry tongue, severe earache, tympanic deafness, and pain over the right shoulder. Dr. Hill Abram saw him with me, and thought the shoulder pain was probably due to neuritis. On the twelfth day of the illness, the shoulder pain having grown worse, Mr. Thelwall Thomas examined the shoulder and decided to explore the right subdeltoid bursa; this was done, and about 5j of pus evacuated. This pus and the pus from the ear both yielded pure cultures of streptococcus. After this a rapid recovery followed. As the right ear continued to discharge a good deal of pus through a small opening, and the hearing showed no signs of recovering, I made, under chloroform, a very free incision along the posterior border of the membrana tympani. The discharge quickly ceased and the ear recovered its normal hearing.

This, then, was apparently a case in which the primary focus was superficial—that is, without bone disease—and in which no secondary local focus formed in the sinuses or vein. The systemic absorption appears to have been limited to a single dose, which quickly became fixed in one spot and was there destroyed without further dissemination. There was no evidence of mastoid disease or of sinus thrombosis. Events proved that so far as this case was concerned we were right in limiting the operations to the tympanic membrane and the opening of the single metastatic abscess.

(2) The following case belongs to another class: Girl, aged eight. Scarlet fever, acute suppurative otitis, apparent recovery. Two days after discharge from fever hospital swelling behind the ear, rigor; temperature, 104° F. Immediate operation revealed perisinus abscess. General symptoms were entirely arrested by drainage of the abscess. This was not, strictly speaking, a case of otitic pyæmia, but in all probability a few days' delay in operating would have caused acute septicæmia.

Take a third case:

(3) An attack of influenza with acute suppurative otitis in a girl aged fifteen was followed by mastoid empyema. On admission, large suboccipital, deep cervical

abscess. High temperature, and one or two rigors were known to have occurred. The subcortical mastoid abscess extended to the sigmoid groove. The anterior walls of the sinus at the knee were necrotic, and the clot within was beginning to break down. Free opening of the sinus, with wide removal of the infected portion of the clot, led to a complete recovery.

I am aware that it has been stated that there is no portion of such a clot which is not infected. If that is true, then blood-clot must have a high power of dealing with invading organisms. I have heard of one case such as this recovering without any operation, probably because the rapid destruction of tissue opened up a free communication between the interior of the sinus and the antrum.

A fourth case was not the result of an acute otitis, but as it began, under my own observation, as the result of a radical mastoid operation, may be regarded, for the moment, as an acute case :

(4) This was the case of a young man of twenty-one with caries of the floor of the tympanum. The radical mastoid operation was followed by primary infection of the bulb of the internal jugular. Exposure and incision of the sinus revealed no clot. The vein was then tied, and some time later a suppurating clot was washed out through its upper section.

Though this patient made a good recovery, I was guilty of a fault of technique to which I shall refer later. What I want to emphasise now is the urgent necessity for immediate ligation of the jugular in bulbar cases, whether primary or secondary. No such limitation of the infection as could be reasonably supposed to exist in the first three cases could be depended upon in the last one. Once the barrier at the end of the lateral sinus is passed, or if the infection takes place below that barrier, immediate ligation of the vein is called for. These are instances where information was obtainable at an early stage of the probable channel of infection and the probable extent of the secondary focus and the chances of its dissemination.

In the first three cases the risks of ligation exceeded those of non-interference with the vein. When we come to cases in which pyæmic symptoms have existed for four or five or more days, it is much more difficult to obtain the necessary information. Here time has been allowed for the extension along the wall of the sinus itself independently of the clot; the whole clot may have become infected, detached particles of septic clot may have re-attached themselves and established fresh foci in the veins beyond the limit of the original clot.

The photograph and specimen which I hand round will illustrate my meaning. In both these cases the extension was in the direction of and across the torcular—that is, against the stream. How much more likely is it for similar extensions to take place in the opposite direction and yet, as I remarked earlier in my paper, we have no certain guide to show us whether the extension is upward or downward. In the very last case in which I tied and excised the vein there was no cord in the neck, no tenderness along the sternomastoid, but very definite clinical signs of sinus pyæmia and a clot in the sinus were present. The vein, found with great difficulty, was tied and divided at the level of the lower border of the omohyoid. Though reduced to a mere string, its lumen contained a juicy fluid. It might be argued that this was a case in which, the vein being obliterated, its incision was superfluous. I do not think so. At any rate, before the vein was exposed we were in ignorance of its condition, and the symptoms all pointed to continued systemic infection. The patient made a rapid recovery.

My position is, therefore, briefly this, that owing to the comparative failure of the evidence obtained from clinical symptoms, local signs, and partial operations, in cases which have given evidence of pyæmia for one week, nothing short of the complete operation gives us the information we require or certain means of arresting the progress of the disease.

It must be admitted, however, that when the infection takes place high up in the sinus it may be possible to ascertain by operation on the sinus that a firm organising clot exists in its lower part, limited by the anatomical features described above, and if after removal of the disintegrating portion the drainage upwards along the lower part of the sinus appears to be quite satisfactory (I may remark, however, that drainage of the sigmoid is not easy, because the dura, pressed forward and downward by the cerebellum and brain, to a large extent closes the lumen of the sinus), and the systemic symptoms are arrested during the next forty-eight hours, we may assume that the whole of the secondary focus has been eradicated. If, however, there is progressive disintegration of the clot and faulty drainage of the lower part of the sigmoid, it becomes necessary, even without waiting for renewed symptoms, to excise the vein and establish thorough drainage.

The great value of tying and draining the jugular vein and bulb, from the point of view of giving us definite information and so simplifying a case, is shown in cases where recurrent suppuration takes place in the torcular end of the sinus. In a successful case

of my own suppuration occurred in the torcular end of the clot three weeks after the first operation on the vein and sinus and a fortnight after the evacuation of a temporo-sphenoidal abscess. The fact that the vein and the lower end of the sinus had already been efficiently treated was of great assistance in determining on the final operation.

(3) What method of procedure best overcomes the risk of the operation itself and of the disease? With certain exceptions the following is, in my opinion, the best method of procedure:

(a) Perform the complete post-aural operation.

(b) Expose the sinus until a healthy margin of at least half an inch is seen. Introduce a gauze plug between the sinus and bone at this point. Slit up the whole length of the exposed sinus and carefully inspect the clot. In a quite early case, with a probability of an uninfected thrombus in the lower part of the sinus, remove the disintegrating portion of the whole of the clot. If the sinus is found pervious, or the clot is probably breaking down throughout, expose the internal jugular vein, inspect it, tie in two places, below the apparently diseased portion, which may be considerably below the limit of the clot; dissect up the peripheral end, tying off the tributary veins, and bring the end out of the wound. Slit up the vein half an inch or an inch above the ligature. Unless the walls of the vein are much diseased, or there is suppuration along its course, the upper section of the vein need not be excised. Opening up the vein is imperative. I have once delayed this with the result described by Mr. Ballance of converting the vein into a bag of pus. No harm was done, fortunately, but the delay might have been fatal.

(c) Clear out the clot from the sinus and wash through the sinus, bulb, and vein from above downwards. The whole operation should be done, if possible, at one sitting. Washing through has been objected to on the score of risk of driving pus or infected clot into the inferior petrosal sinus. With an open vein this is practically impossible, as the anatomical arrangement of the sinus shows; and if it is not done, extension by continuity in the condylar vein and petrosal sinus will occur.

(d) I have not ventured to speak of the operation of exposure of the bulb, for the simple reason that I have no practical experience of it. I have not been able to persuade myself that it was required.

(4) Under what condition, if any, is it necessary or advisable to tie the vein before operating on the temporal bone and lateral sinus?

(a) Whenever it can be demonstrated, or it is even suspected, that there is or has been a clot in the internal jugular vein or its bulb.

(b) When there is extensive disease of the temporal bone in the immediate vicinity of the bulb, and a radical operation has been decided on.

In these cases, in my opinion, the ligation of the vein should precede any further operation, but should be immediately followed by the obliteration of the sinus.

INTRODUCTORY PAPER.

By JAMES F. MCKERNON, M.D.,
New York.

A CLOSER study of the symptomatology of the various sequelæ of otitic disease, both acute and chronic, during the past five years has enabled us to more quickly and accurately diagnosticate sinus, bulb, and jugular involvement than formerly, hence our method of procedure in dealing with one or more of these complications differs materially from the treatment formerly in vogue.

In speaking of the indications for the ligation of the internal jugular vein, I shall confine myself briefly to my own personal experience when called upon to treat this sequelæ of otitic disease.

At the beginning let me say that there are but a small number of cases which when first seen present a set of symptoms sufficient in themselves to admit of a prompt diagnosis of vein involvement, and then only in cases of long standing, when a sufficient time has elapsed for an extension of the process from the sinus and bulb to the vein below.

The large majority of sinus cases are not present, or if so, are not recognised, at the time the primary mastoid or radical operation is done. The classical symptoms which enable us to recognise and properly care for these cases develop from a few hours to several days later, so that the majority of sinus and vein operations that are done are subsequent to a primary operation.

The rule which I have followed in this work has been that when we open the sinus for exploratory purposes, and find either pus or a disintegrated clot, or both, present, to stop further manipulation above so as not to disseminate any more poison from the local focus into the general system, and immediately expose, ligate and resect the internal jugular vein from its exit at the skull to a

point just above the clavicle, at the same time removing all infected glands encountered during the course of the dissection. When this has been done, the sinus and bulb are then evacuated of their contents, and I have but seldom found it necessary to remove the lateral wall of the foramen. If, when the sinus is first opened, a firm parietal clot is exposed and removed, and a free hæmorrhage takes place from both distal and proximal ends, I have not considered it necessary to molest the vein, although in a few cases I have subsequently been obliged to remove the vein owing to the continuance of the symptoms for which the sinus operation was done; so that each year, as our knowledge of this disease becomes more positive, I am more and more convinced of the necessity of primary jugular ligation where cases present themselves with definite sinus symptoms,¹ even though evidence of vein involvement be negative. I know that exception to this will be taken by many, but the statement is made only after a faithful trial of both methods, which has left me, for the sake of the future of my patients, unqualifiedly in favour of a primary ligation of the jugular vein.

A point referred to by many observers in treating thrombus of the sinus is that when a free return flow of blood takes place from the bulbous portion of the sinus, it is a positive indication that there is no obstruction below. With such a statement I must take issue, for in eight cases where I did a primary ligation of the internal jugular vein as a first step in the treatment of sigmoid sinus thrombosis, and immediately afterward exposed and evacuated a disintegrated clot from both sinus and bulb, such evacuation was at once followed by a free and, if allowed, prolonged hæmorrhage in each case, showing distinctly that such return flow does not come to any extent from the vein below, but has its source in the inferior petrosal sinus. So I believe it is extremely unwise to depend upon such a return flow from the bulb as an indication that the vein below is carrying on its usual function. Even though it were carrying on its function, if the case be a very septic one, and the vein be removed and its walls examined, septic micro-organisms will be found embedded throughout, and it is from just such a condition as this that I believe many subsequent infections develop, even after all the septic materials have been removed above.

In a number of cases of thrombosis in young children, when the site of the obstruction was at the bulb, I have not ligated the vein

¹ By definite symptoms I refer to a chill, and the wide excursions of temperature which are usually present in typical cases.

for the reason that they were seen and operated upon early, and also because young children, in my experience, do not bear prolonged operations well. In some of these cases I have had to do a subsequent ligation, but did it at a time when the temperature was on a decline, believing that these patients react better when operated upon with a low temperature than when it is high, as it puts less strain upon an already weakened system, and there is less depression following.

In closing, just a word about the neck wound after ligation and excision of the vein. I have usually closed it by suturing, except for a small space at the upper angle, but before closing insert a large cigarette drain the entire length of the wound. The parts are dressed with gauze soaked in a hot saline solution, and this dressing is changed every twenty-four hours, and each time it is dressed about an inch of drain removed, so that at the end of five or six days the neck wound is completely healed and the drain removed.

DISCUSSION.

Dr. MACCUEEN SMITH strongly commended early operation.

Dr. GEORGE A. LELAND (Boston) said the opening papers by Mr. Jones and Dr. McKernon had been so exhaustive that he hesitated to add anything. He fully agreed that ligation and resection of the internal jugular was necessary in a large number of cases when it was perfectly evident that the pyæmia present—whether of shorter or longer duration—was of otitic origin, and when, after ablation of the carious mastoid process, extensive involvement of the sinus was found. This held good especially when the infection was rapid and virulent, as sometimes observed in cases of the exanthemata, or in extensive pneumococcal or influenzal infections in which they could not operate too quickly. There was, however, another large class of cases in which the process was milder, and in which they could have more time. In these, after removal of all the diseased tissue in sight, including the whole mastoid process and the outer wall and contents of the sinus even down into the bulb, they could by modern methods tell exactly what was going on. For, by determining the degree of leucocytosis, and especially the relative proportion of the polynuclears, they would know if pus-absorption were still proceeding, and could act accordingly. Thus, it had been his good fortune during the past few years to see the ante-operative pyæmia disappear, sometimes rapidly, sometimes gradually, after removal of all accessible diseased tissue, showing that the bactericidal power of the blood was worthy of being trusted. Or it might be a case of osteophlebitis, and the pyæmic symptoms might be caused by absorption of toxins. In this event it was satisfactory not to be obliged to subject the patient to the operation in question, and so to make possible the circulatory disturbances which certainly had in some instances followed the obliteration of this large venous channel.

Dr. W. SOHIER BRYANT said that ligation of the vein should precede section or incision of the sinus. The indications could be divided into: (1) General: a febrile temperature with wide fluctuations or metastatic

foci of infection; (2) local: (a) necrosis of the wall of the sinus or bulb; (b) suppuration of the wall of the sinus or bulb without active growth of granulations. He did not consider the presence of a thrombus an indication for the ligation of the vein in the absence of all the other conditions mentioned.

Dr. J. A. STUCKY (Lexington, Kentucky) mentioned one point of sufficient importance, he thought, to be emphasised, especially in the after-treatment of the case—namely, the daily blood count. Not only the number of leucocytes, but the percentage of polynuclear cells should be taken into account. These indicated the condition of body resistance, and afforded evidence of septic absorption.

The PRESIDENT was greatly impressed by Dr. McKernon's arguments in favour of frequent ligation. In the presence of certain evidence of thrombosis of the bulb he had no hesitation in ligaturing at once, as in a case of bulbar pyæmia and cerebellar abscess which he published lately in detail.¹ Further, if a clot were felt in the jugular vein, and especially if softening, there was no room for doubt. He was convinced, however, that there were many cases of thrombus of the sigmoid sinus with breaking down in the middle in which it was sufficient (after removing the original focus in the petrous bone) to clear out the broken-down part, leaving a plug of healthy clot on the proximal side. He drew attention to Macewen's remarkable series of recoveries without ligature, but ventured to think that such a continuance of good results was not likely to be maintained with recourse to this proceeding. He was still in doubt as to the indications for ligation in the cases subsequent to acute suppurative otitis, especially in view of such histories as those narrated by Mr. Hugh Jones. The repeated examination of the blood and observations of the course of the symptoms were important helps. He felt that the last word had not yet been said on the subject.

REPLY.

Dr. McKERNON, in closing the discussion, said that to the question, Was ligation of the vein dangerous? he would answer, No, provided the patient's strength be good. The danger of ligation did not outweigh the advantage of its being left alone, for infection might take place. The nature of the infection had no bearing upon whether they should or should not operate. The reason cases recovered without ligation was not because the entire focus had been removed, but because the resistance of the system was sufficient to eliminate the poison. If clot were removed and the vein left untouched how were they to know that infection was not going to continue? They did not know, but had to wait, and this waiting might be too long for their patient's safety. He believed it was wiser to ligate at once than to wait several days and then ligate when it was too late to save their patient. Rapidity had much to do with the success of their operations. He thought, as Dr. Leland had said, that the differential blood count was very valuable, both before operation, as an aid in diagnosis, and later as an indication as to whether the poison had been eliminated or was increasing. He used the count in all cases. In reply to Dr. Stucky, he might state that the cigarette drain was simply a piece of plain sterilised gauze rolled firmly, as long as the little finger, covered with perforated rubber tissue, and placed the entire length of the wound,

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxi, p. 113, March, 1906; *Lancet*, April 14, 1906.

the ends protruding from the angles of the wound. Dr. Dundas Grant's method of clearing out a disintegrated clot, with or without pus in the sinus, he believed to be unwise, for the coats of the sinus were impregnated with the micro-organisms, and subsequently a further infection would occur if the operation were stopped at that point. Dr. Jones had made the duration of the disease an indication for ligation; he thought that its virulence should also be considered.

Abstracts.

ACCESSORY SINUSES.

Capart, A., jnr. (Brussels).—*The indications for operation in the treatment of Sinusitis.* "La Presse Oto-Laryngologique Belge," February, 1906.

Three questions are here discussed, namely, the relative frequency of intra-cranial complications in affections of the sinuses; the dangers of certain operations; and the prognosis of intra-cranial complications. The author concludes that although dangerous complications may supervene, yet, considering the great frequency of cases of sinusitis, we must regard these dangerous sequelæ as very rare. Moreover, as many published cases show that radical operations are not without serious risk, a degree of prudence is advisable in recommending operation, especially in cases where the patient's symptoms are not in proportion with the pain and risk entailed by operative treatment. When a serious complication has occurred it is the absolute duty of the surgeon to operate, although, from the small number of successful cases on record, the issue may be considered extremely doubtful.

Chichele Nourse.

LARYNX.

Paterson, D. R. (Cardiff).—*The Operative Treatment of Laryngeal Papillomata in Children.* "The Lancet," July 21, 1906.

The author, in this short paper, draws attention to the advantages of the direct endo-laryngeal method. After reviewing the various operative measures in vogue for the removal of laryngeal papillomata in children, he proceeds to describe the method by which, in his experience, the larynx can be most easily brought under direct inspection, and the endo-laryngeal procedure greatly simplified.

The instruments required for the removal of papillomata by the direct method are a fish-tail tube spatula, with handle attached and a straight forceps. For illumination he recommends the Kirstein electric head lamp. The operating table should be of sufficient height to enable the operator, when seated on a low chair, to work conveniently. The patient should be placed on the back with the head hanging over the end of the table and a low pillow under the shoulders. Chloroform is the most suitable anæsthetic to administer, and full anæsthesia can be kept up from a Junker's inhaler. The pharynx is brushed lightly with a 10 per cent. solution of cocaine, the tube spatula is introduced, and through it the entrance of the larynx and the under-surface of the epiglottis are similarly brushed. In the introduction of the spatula its point is passed along the under-surface of the epiglottis and then tilted upwards, so that it carries that structure forwards and enables an admirable view of the larynx to be obtained. In the majority of cases even this is not necessary.

Placing the fish-tail end of the spatula on the base of the tongue immediately in front of the epiglottis and exerting pressure forwards is quite sufficient to bring the interior of the larynx into full view, and the whole of the operation can be carried out with the spatula in that position. For the removal of the papillomata Dr. Paterson uses a form of forceps which he has had constructed for the purpose. It is a forceps with a straight shank, fashioned on the crocodile principle, and terminating in a beak with cutting edges. From the bend on the shank to the tip the length is nearly eight inches. It is used through the tube spatula and is lightly built, so as to interfere with the view as little as possible. At the same time it is capable of dealing with fairly tough tissue. Various forms of beaks have been constructed to fit into the different parts of the larynx.

In operating, the forceps are introduced through the spatula and the pieces are grasped and removed. If it is done rapidly the larynx can be fairly cleared before hæmorrhage shows itself to any extent. The two parts of the larynx which are the most difficult to get at are the anterior commissure and the subglottic space. It is here that recurrence is most apt to take place, as the removal is often imperfect. To overcome this Dr. Paterson has found the narrow beak forceps very serviceable, and their use may be supplemented by a curette. For this purpose he has employed a modification of Lõri's curette.

The endo-laryngeal operation carried out by the direct method has given Dr. Paterson such excellent results that he has no hesitation in urging its adoption in the first instance in all cases of laryngeal papillomata. Where recurrence takes place soon and is persistent he advises, in addition, the wearing of a tracheotomy tube for a time. This has a distinctly good effect in retarding the growth and enables the operator to deal more thoroughly with the papillomata at each sitting.

Jobson Horne.

EAR.

Fallas, A.—*Statistical Report of the Department of Oto-rhino-laryngology at the Hospital Saint-Jean at Brussels, under Dr. V. Delsaux.* "La Presse Oto-Laryngologique Belge," January and February, 1906.

A record of the work of the year 1905, during which 3895 new patients were seen, of whom 1471 came from other departments of the hospital. Many of the interesting and important cases are reported in detail; amongst them the following are recorded: two cases of fracture of the external auditory canal from falls upon the chin; a case of carcinoma of the ear simulating Bezold's mastoiditis (the symptoms in this case were discharge from the ear, and pain; then followed facial paralysis, projection of the auricle, enlargement of the neighbouring lymphatic glands, and swelling of the mastoid and the parts below it. The diagnosis only became apparent at the operation); a case of subacute otitis and severe mastoid pain in an hysterical subject in which the mastoid was opened fruitlessly; a case of tuberculosis of the nose, persisting after several operations; a case of acute rheumatic inflammation of the larynx, with perichondritis, in a woman aged eighty-three, which yielded to sodium salicylate; a case of foreign body in the larynx in a woman aged fifty-two (a sharp piece of bone, lodged in the right pyriform fossa, was removed after eight days; it had set up perichondritis, and an abscess formed; the patient recovered); a case of hysterical œsophageal spasm cured by ablation of the hypertrophied lingual tonsil.

Chichele Nourse.

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THE TORONTO MEETING.

IN our last issue, through the courtesy of the *British Medical Journal*, we were able to afford our readers the opportunity of studying some of the important papers communicated to the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association recently held in Toronto. In our present issue will be found a further report of the proceedings.

The meeting of this Section, under the presidency of Dr. Dundas Grant, may be confidently stated to have been a complete success; the attendance was large even as compared with the best averages of our home meetings, and an excellent programme was carried out in the most satisfactory way. Great praise is due to the secretaries, Dr. Brown-Kelly and Dr. Gibb Wishart, for this result. The papers and discussions were grouped so that subjects which were similar or related were taken together, the time occupied in discussion being thereby judiciously economised.

The first day was mainly devoted to a discussion on operations for the correction of deviations of the nasal septum. Dr. StClair Thomson advocated that form of sub-mucous resection known here as Killian's, and Dr. Otto Freer, of Chicago, the sub-mucous operation as elaborated by himself. On the other hand, Dr. Roe (Rochester), whose works in connection with nasal deformities have been so long known, maintained that a crushing operation was more applicable to those cases in which a deflection was mainly constituted in the osseous parts of the septum. Dr. MacDonagh,

the Canadian vice-president, advocated a middle course, and on the whole, although a judicious eclecticism was considered the ideal attitude, there was no doubt that the sub-mucous resection was rising in favour very rapidly, perhaps too rapidly. Two other items were instructive radiograms exhibited by Mr. Hugh Jones, of Liverpool, and Dr. Mosher, of Boston, the former of an exostosis of the frontal sinus, the latter of a partial partition on the outer wall of the sphenoid. One of the most valuable communications of the whole meeting was one on skiagraphy as an aid in the diagnosis and treatment of diseases of the accessory sinuses of the nose, which was made the following day by Dr. C. G. Coakley, of New York. This was illustrated by such an instructive exhibition of excellent negatives as will, no doubt, give a great impetus to the cultivation of this side of our specialty on the part of all those who witnessed it.

The rest of the second day was mainly devoted to the nose and accessory sinuses. Dr. Smurthwaite read a paper on "Headache associated with Pathological Conditions of the Middle Turbinal." Dr. Perry Goldsmith described a series of exceptional cases of frontal sinus suppuration involving difficulties which he overcame by the exercise of considerable ingenuity and skill. Dr. Herbert Tilley contributed his most recent views on the operations on the antrum, frontal, and sphenoidal sinuses. The subsequent discussion indicated a slow but increasing appreciation of the value of conservative intra-nasal treatment of the sinuses so long as valuable time was not lost. The variations in the shapes and sizes of these cavities was well brought out by a collection of serial sections of heads prepared by Dr. Hanau Loeb (St. Louis) by the superposition of which a composite average type was arrived at. On the same day the Section joined with that of Pediatrics for the discussion of congenital stridor, both laryngeal and tracheal, the main point being the question as to whether the former was due to mechanical insuction of abnormally flaccid laryngeal walls, or to neurotic disturbance of co-ordination of the respiratory movements, the latter view being maintained by Dr. Ashby, of Manchester, as well as by Dr. Logan Turner, who introduced the discussion; there seemed to be, however, a growing feeling in favour of the former view.

The President deplored the small proportion of the programme relegated to otology, but the very excellent papers and discussions on the third day of the meeting made up in quality what was apparently defective in quantity. Dr. Shambaugh (Chicago), whose

investigations into the blood-supply of the labyrinth are now well known, illustrated his views by means of celloidin casts of the inner ear. The main feature of the day's programme was a discussion on the indications for the ligation of the jugular vein in otitic pyæmia. This was opened by Mr. Hugh Jones (Liverpool) and Dr. J. F. MacKernon (New York), both of whom have had very extensive experience in the treatment of this form of disease, and the discussion which appeared in our last issue has, no doubt, been read with great care. Dr. MacKernon's experience had led him to adopt very thoroughgoing measures of operation and early ligation of the vein, Mr. Jones, although in the main agreeing with him, being much impressed by certain cases of acute otitic pyæmia which had recovered without ligation of the vein. The first essential in the treatment in his opinion was the complete eradication of the primary focus in the temporal bone and of the secondary focus or foci, if present, in the venous channels. It had to be admitted that the last word had not been said on this important matter. The pathogenic influences of aural lesions on the general system was the subject of a communication by Dr. Macuen Smith (Philadelphia); he pointed out how often the symptoms were mistaken for those of malaria, typho-malaria, or meningitis. He dwelt particularly on the value of examination of the blood with regard to leucocytosis, and more especially as to the percentage of leucocytes which departed from the normal polymorphonuclear type. This clinical point will probably receive more and more attention. The scope of conservative methods in the treatment of aural diseases was taken up by Dr. Gorham Bacon (New York), who indicated that the operative pendulum had swung a little too far to one side and that more conservatism might be practised. One speaker expressed the opinion that while operations for chronic otorrhœa were perhaps too frequently resorted to, the mastoid drainage for acute suppurative otitis was not practised often enough or early enough. Dr. Clarence Blake (Boston), who was welcomed as the *doyen* among the otologists present, described his method of preserving the blood-clot as a primary dressing in mastoid operations, which in his hands and those of Dr. Sohler Bryant, who had practised it with him, appeared to give in many cases the most satisfactory results.

The final day of the meeting was chiefly occupied by a discussion on laryngeal disturbances produced by voice use, their causes being very logically marshalled by Dr. Middlemass Hunt, of Liverpool, who opened the discussion. Among other interesting points

elicited by him was the fact that singer's nodules might be present without inducing any disturbance of voice; in point of fact it might be almost said that it was sometimes better that they should not be discovered. Hence, too great zeal in treating them was to be discouraged. Dr. Casselberry referred to the neuro-muscular disturbances, but he emphasised particularly the value of rest in hyperæmia, and the importance of treating diseases of the pharynx and nose. The President referred to the difficulty in deciding as to when to order rest and when exercise of the voice; the latter had its place and the former might be kept up too long, to the disadvantage of the patient. He expressed appreciation of the methods advocated by Holbrook Curtis, of New York, in cases of nodules, and in his opinion in hyperæmia apart from these. He further alluded to the fear sometimes expressed that so much importance was attached to the effect of nasal disease as to constitute a danger to laryngology; he asserted, however, that it was in any case no source of danger to the larynx. The influence of nasal disease as an etiological factor in the production of sputa afforded Dr. Peyre Porcher the text for a paper expressing views with which most present were familiar, and with which they were mainly in accord.

Among the most striking papers was one by Dr. Chevalier Jackson (Pittsburg), on "Thyrotomy and Laryngectomy for Malignant Disease of the Larynx." He described with engaging modesty a series of operations with results, on which the Section gave him the most cordial congratulations. Among other papers was one by Dr. Richards (Falls River) concerning two cases of "Abductor Paralysis," in which tracheotomy was called for, and one by Dr. Alice G. Bryant (Boston) on "The Use of the Cold Wire Snare in the Removal of Hypertrophied Tonsils," which gave rise to a most interesting discussion, mainly concerning the frequency or rarity of hæmorrhage after removal of tonsils, the extraordinary extent to which experiences differed being well illustrated. Another interesting communication was one by Dr. Mosher (Boston), who showed a speculum for direct inspection of the pyriform sinuses and the upper end of the œsophagus, the very part of the alimentary tract which is too low for the laryngoscope and too high for the œsophagoscope, but yet a very frequent site of disease. Dr. Smurthwaite's artistic ability and skill in laryngoscopy were illustrated by a number of oil paintings of laryngoscopic views of the larynx.

It will be seen that the programme was both varied and instructive, and the good feeling and courtesy exhibited by all, even to

those with whom their views appeared to differ to the utmost, were all that could be desired. The enjoyment of the meeting was greatly heightened by the attitude of the Canadian hosts towards their visitors from the British Isles and from the States of America. The hospitality extended by Dr. Macdonagh, Dr. Price-Brown, and the genial secretary, Dr. Gibb Wishart, was greatly appreciated. The impression produced on the British visitors by the earnestness, courtesy, and cordiality of their American cousins was one which we are sure will never be eradicated. The value of such meetings towards forwarding the brotherhood of mankind is surely most valuable.

ANNUAL MEETING OF BRITISH MEDICAL ASSOCIATION.

SECTION OF LARYNGOLOGY AND OTOTOLOGY.

INTRODUCTORY REMARKS.

BY THE PRESIDENT, J. DUNDAS GRANT, M.D. EDIN., F.R.C.S. ENG.

WHILE gratefully acknowledging and appreciating the great honour which I have received in being appointed to preside over this Section, I feel very deeply the responsibility devolving upon me. It is my duty to enable everyone who has something to impart to have an opportunity of doing so, and in order that this consummation may be attained in the limited time at our disposal I must ask you to support me in my endeavours to compress and direct our discussions.

Our programme, though fairly comprehensive, has, as it happens, a comparatively small proportion of it devoted to otology proper. It is too late to rectify this, and though I am personally to some extent responsible for it I feel that it is to be regretted. I will content myself with expressing the hope that the dazzling brilliancy of the results of our modern surgical otology may not be allowed to divert our gaze from the minute details of intra-aural technique. The former are answerable for the saving of many lives from danger, but the latter enable us often to prevent our patients from running into those dangers. The aurist who, as Professor Lucae has said, can cure the largest number of cases without recourse to major operations is the one most deserving of

credit. When danger is present or threatening there is no stronger advocate for operative interference than myself.

I am happy to say that our programme includes a paper by Dr. Bacon, of New York, on the question as to how far it is advisable to adopt conservative methods in the treatment of aural diseases, and one by Dr. Clarence Blake on the value of blood-clot as a primary dressing in mastoid operations, both of which are certain to be both suggestive and informing. In the museum, also, you will be interested to see a stereoscopic view of a human labyrinth prepared by Dr. Albert Gray, of Glasgow, showing a calcareous patch in the vestibule, while in the Section of Anatomy Dr. Shambaugh will describe the development of the stria vascularis and the circulation in the labyrinth of the pig, in continuation of the work with which he is so thoroughly identified. We can only hope that others of our Anglo-Saxon *confrères* will be encouraged to investigate the internal ear.

Let us not forget that the ear is primarily an organ of hearing, and cultivate the accuracy and patience in examination and dexterity and delicacy of manipulation upon which our success in relieving our patients and, may I say, in making our own reputation so much depends.

Although a Scotchman, and as such naturally ready to "improve the occasion," I am not going to give you the typical "ethical" lecture. For my part, I find that so much of my time and attention is required for the correction of my own shortcomings that I have been unable to occupy myself with those of my neighbours. I would suggest as a good rule to "mind your own ethics and leave other people's alone."

Another rule which we may apply to our present meetings is to concentrate our attention on what is best in whatever our *confrère* is imparting rather than in trying to find arguments against what he advances. We may thus lose the opportunity of making dialectical "hits" and of scoring for the moment rhetorical "points," the fallacy of which is subsequently realised, but too late for the mischief to be undone.

By trying to understand and assimilate what is best in papers and speeches I have read or listened to I have acquired an amount of useful working knowledge of our subject which my limited powers of original insight would never have enabled me to attain. May I suggest this receptive frame of mind as the most profitable one in which to start. At the same time, it is quite necessary to be on the alert for the detection of fallacy, whether unintentional—

for we are liable to err—or intentional, because it is human to wish to gain one's point. With your help I shall make it my proud duty to try and keep our discussion clear of both.

A DISCUSSION ON LARYNGEAL DISTURBANCES PRODUCED BY VOICE USE.¹

INTRODUCTORY PAPER.

BY MIDDLEMASS HUNT, M.B., C.M.,

Lecturer on Laryngology, Liverpool University.

OUR President in inviting me to open this discussion requested that I should not try to give a complete summary of the whole subject, but should rather prepare a clinical paper based as far as possible on my own experience. I have done my best to carry out his instructions, and to this end have arranged my material under the following heads:

(1) Use of voice through its whole compass, at definite degrees of pitch, and usually for short periods of time—singers. Lesions: hyperæmia, muscle paresis.

(2) Use of voice for long periods, but with prolonged intervals of rest—preachers, public speakers. Lesions: chronic congestion, phonasthenia, neurotic disturbances.

(3) Daily use of voice for many hours at a stretch—school teachers. Lesions: laryngeal nodules, fibromata.

(4) Violent use of voice for long or short periods and in unfavourable surroundings—hawkers, drill sergeants, auctioneers. Lesions: Submucous hæmorrhage, rupture of muscle or ligament, pachydermias.

(5) Use of voice for long or short periods at an unnatural pitch or in an unnatural manner—actors in certain rôles, choirmasters, falsetto singers. Lesions: Congestion, hypersecretion, benign growths, especially fibroma.

The term "laryngeal disturbances," though no doubt purposely chosen, is rather a vague one. I take it to include those changes which are detected by the ear of the observer, or by the subjective sensations of the patient, as well as the objective changes seen in the laryngoscope. And here I should like to insist that for the discovery and cure of many of those laryngeal disturbances more is needed than skill in the use of the laryngoscope. A practical

knowledge of the essentials of voice production and some acquaintance with the art of singing are also necessary. Our ears will frequently come to our assistance in detecting vocal defects when the laryngoscope leaves us without guidance. I have learned more from hearing such patients sing, or preach, or teach, or act, than from examining their throats. I have therefore followed them to the concert room, the church, the school, or the theatre with much enjoyment and profit to myself, and, I trust, not without advantage to them.

As in singing the greatest demands are made on the functional integrity of the larynx, the most trifling alterations in that organ or in the general health, which would in no way inconvenience other voice users, may become of the greatest importance. We therefore constantly have singers come to consult us when as yet there is no visible lesion of the larynx, at least when they present themselves for examination. The complaint may be of slight hoarseness, or rapid fatigue after any vocal effort, or that the voice breaks on a certain note.

It is the little rift within the lute
That by and by will make the music mute.

How are we to discover the nature and cause of such a disturbance? By hearing the patient sing and examining the larynx immediately afterwards, we may then find a congestion of the cords or a paresis of the vocal muscle, which will have passed off the next day or even earlier.

We are all agreed that the voice troubles of the singer are almost always due to wrong method and rarely to overuse. So much has been written on this subject that I need say but little. "There has been enough truth in the world for centuries to redeem every soul in it," says Mark Rutherford, and there has been "enough truth" known about voice production for some centuries to save every voice if it were only acted upon. The art of singing is centuries older than the science, and I am afraid that the science has not advanced the art.

The foundation of all artistic singing rests upon the right management and control of the breathing and on the perfect looseness of the tongue, throat, and jaw, which naturally follows. "He who knows how to breathe and how to pronounce," said one of the greatest Italian singers, "knows well how to sing," which means that unless the breath is controlled by the muscles of respiration only and the tongue left in perfect freedom for pro-

nunciation, artistic singing is impossible. Till these things have been learnt nothing has been learnt, and the learning of them takes years of practice. From the neglect of these two essentials arise most of the singers' troubles. Straining of the muscles of tongue, pharynx, and larynx leads to congestions, pareses, new growths, vocal fatigue, cramps, and the many other evils we are familiar with.

Apart from what I have called the foundations of all artistic singing there are two errors in training which constantly lead to serious voice disturbance. The first is the forcing upwards of the registers, especially the carrying of the chest tones too high, and the other is the mistaking of the natural quality of the voice, so that a tenor is trained as a baritone or *vice versâ*, or a mezzo-soprano as an alto. The first mistake should never happen under a competent master, but the second will occasionally occur to the most experienced teacher. Though these are primarily questions for the singing master to decide, the laryngologist will be able to assist by examining the larynx after certain vocal exercises have been used for a time, to determine if an undue amount of laryngeal congestion follows.

Here I should like to refer to what has been called physiological congestion of the larynx. The late Professor Stoerk declared that he had never seen congestion of the cords follow the use of the voice in trained singers. His experience, however, does not agree with that of other observers. In the majority of singers, whether trained or in process of training, though more commonly in the latter, a slight congestion of the cords, especially around the vocal processes and the arytenoid region, will be found if the larynx be examined after any big vocal effort. If this passes off quickly—say in half an hour—then I think it may be regarded as physiological. If, however, it remains for some hours, or reappears whenever the voice is used even a little, then I should consider it pathological. In many bass and baritone singers I have met with a slight permanent congestion of the cords, even where the voice was in perfect order. This I do not look on as physiological but pathological, and due to some chronic catarrh of the upper respiratory tract arising from something in the habits or general health of the individual.

The use of the voice, especially in women, while suffering from any inflammatory trouble in the upper air passages, or any disturbance of general health, may be followed by serious results. Through the menstrual period, for instance, there is often con-

gestion, and even swelling, of the inter-arytenoid space. I have known sopranos who always lost the upper part of the voice at such times, and I once examined a well-known soprano the day after she had sung at a big concert of Handel's music at such a time, when I found a large extravasation of blood occupying more than half the upper surface of one vocal cord. She was conscious that something happened in her larynx while singing, but finished her solos in good voice. Next day she was slightly hoarse, and had a feeling of something in her larynx which could not be cleared away.

Much has been written about the baneful effects upon the larynx of the *coup de glotte*, and I quite admit that if wrongly understood and practised it must be most injurious; but rightly understood what does it mean but the exact correspondence between the arrival of the air at the larynx and the adjustment of the cords to receive it. If the cords are too late in closing a portion of the breath is wasted. If, on the other hand, the cords are tightly closed, *hermétiquelement fermé*, as Mandl describes it, and then burst apart by the out-rushing column of air, there is waste of power in forcing the cords apart as well as unnecessary straining of the "vocal" muscle. To show how the *coup de glotte* can be wrongly taught, I will quote a description of it from a well-known musical authority: "The *coup de glotte*," he says, "is affected by closing the larynx by means of the sphincter action of the ventricular bands, and so collecting an amount of air-pressure to impinge upon the approximated membranes the moment the sphincter is suddenly relaxed. After the note has sounded it can be 'pinched off' by contraction of the sphincter." No wonder the *coup de glotte* has fallen into disrepute if this be a correct description of it.

The laryngeal disturbances arising from misuse of the singing voice take many forms. There may be aching and sense of fatigue coming on at once with any attempt to sing, or slight hoarseness, either temporary or constant, or the loss of certain notes at the upper part of the voice or in its middle — what the Germans call *Einloch in der stimme*, or an involuntary tremulo occurs on certain notes or throughout the whole compass, or the whole voice simply becomes weak and loses its carrying power, or it may be completely lost. Probably the commonest trouble is the development of an involuntary tremulo, and in women the loss of certain notes in the lower part of the head voice.

When we come to the laryngoscopic examination of singers who suffer from the foregoing disturbances, we may find a perfectly

normal larynx, or more or less extensive congestion or excessive mucous secretion, or evidence of muscle paresis. Now, in my experience, the muscle paresis of singers, as seen in the laryngoscope, always takes the form of imperfect closure of the ligamentous glottis, the form we recognise as resulting from paresis of the internal thyro-arytenoid muscle, in which an elliptical opening remains between the cords. I observe that certain writers state that they find in many cases a wavy outline of the edges of the cords, which is said to indicate paresis of the crico-thyroid muscle. All I can say is that I have never seen this form of change of the glottis and that I do not know of any way in which we can determine by laryngoscopic examination how far a paresis of the tensors of the cords is due to paresis of the thyro-arytenoids, or how far to weakness of the crico-thyroids. I think, however, that if by pressure on the anterior part of the cricoid cartilage we can restore the lost tones to the voice, we are justified in concluding there is some paresis of the crico-thyroid. I agree with v. Ewald when he says, "the thyro-arytenoid is the true vocal muscle which makes the larynx a musical instrument, its function being to stretch the cords and make them thin."

Another condition met with in singers as a result of wrong use of the voice is a persistent hypersecretion of mucus, at times accompanied by some laryngeal congestion. I have seen it most frequently in basses and baritones. The amount of vocal disturbance caused by this condition, in which beads of mucus gather and dance along the edges of the cords during the singing of a note, varies very greatly. In using full chest tones nothing may be noticed wrong, but when the singer uses his medium register, and is singing piano passages, the tone becomes rough or breaks, or the larynx refuses to "speak." It is a condition I have met with in many professional singers, and one which in my experience is very unsatisfactory to treat.

In turning to the voice troubles of the preacher and occasional speaker, the first fact to note is that he approaches his work almost always without training. While no singer appears in public without some training in voice production, he seems to think that public speaking, like reading and writing in the opinion of Dogberry, "comes by nature." And perhaps it is for this reason that the treatment of voice failure is often more successful in the preacher than the singer. He has no method to unlearn, for he has never been taught any.

It is at once the ruin and the salvation of the preacher that his

voice has prolonged periods of rest from professional use. He has a week to recover from the injury done to his larynx on a Sunday, and if he be a man of good physique he may go on for many years, though violating every canon of voice production. We all know that the clergyman who has daily services suffers less than one who makes a big effort once a week. It is just like going a big cycling or walking tour, for which the best preparation is to cycle or walk a few miles every day. Moreover, the man who makes daily use of his voice will soon discover if he is doing anything wrong, and either by dint of practice hit on a right method or quickly break down and come into the hands of the physician and the voice trainer.

Another peculiarity in the clergyman is that often the bad production he has acquired in church becomes habitual in every-day speech, and is therefore more difficult to eradicate. This is so notorious that when the English actor wishes to represent a parson on the stage he stiffens his tongue and throat muscles and raises his voice some tones above his normal pitch.

For the speaker or preacher the method of voice production is the same as for the singer—a proper control of the breath and perfect looseness of the throat, tongue, and all the muscles of articulation. It will be found, as a rule, that the speaking voice is best developed and brought under control by the practice of musical sounds, though many great speakers have had no skill in song.

The two chief faults of the preacher and speaker are pitching the voice too high and uttering too many words on one breath, or rather, with imperfectly controlled breath.

Now, this question of pitch is a difficult thing to manage, because it must vary with the building in which the speaker finds himself and with the size of his audience. The object of the speaker should be to increase intensity with very little rise in pitch, and to cultivate the music of speech, the vowel sounds, for upon these will depend for the most part the carrying power of the voice. I cannot agree with the advice, "Take care of the consonants, and the vowels will look after themselves." Much more frequently the speaker should be taught to subdue his consonants, to take them crisply and lightly, and to get roundness and musical quality into his vowels, allowing the consonants to act merely as lines of demarcation in the current of vowel sound. Undue force in the articulation of the consonants produces stiffness of the jaw and tongue, which extends to the laryngeal muscles, and thus produces strain.

The laryngeal disturbances of the preacher nearly always take the form of rapid exhaustion of the voice when used professionally, and especially common are those forms of neurotic trouble which Fraenkel has described under the name "mogiphonia." The complaint may be of aching or even severe pain in the throat and chest whenever the voice is used, or that its tones are tremulous and uncertain, or rapidly become weak and fail entirely, or that in attempting to speak spasmodic contraction of the pharyngeal and laryngeal muscles occurs, and no tone can be emitted. In fact, we have a laryngeal neurosis similar to writer's cramp, which may take a neuralgic, tremulous, paralytic, or spastic form. Of course, the great majority of cases never get beyond the stage of vocal fatigue. That clergymen are more liable than other voice users to the severer forms of nerve trouble I regard as often the result of sedentary habits and the want of healthy out-of-door exercise.

The laryngoscopic appearances in these cases are not well marked. There may be no more than a slight muddy congestion of the cords, and what we call relaxation of the laryngeal mucous membrane. There is not, as a rule, the bright localised congestion or the marked paresis met with in the singer. The trouble is more a neurosis than merely a local injury. For this reason, in many cases, prolonged voice rest, with change and general tonic treatment, are needed before the patient is sent to the voice trainer. In no class of voice users, however, have I seen better results from treatment, and I can recall many cases of serious vocal collapse where the voice was completely restored, and years of hard work followed without further trouble.

There are two important facts regarding the third class of voice users—the teachers. First, that in them the voice has to be used professionally for many hours daily; and, secondly, that the overwhelming proportion of those who come under our care for laryngeal troubles are females.

Now, the symptoms of the teacher's throat troubles are very characteristic. She complains of hoarseness, which increases towards the close of each day and towards the end of each week. She begins Monday's work with a good voice, and after her summer holiday she thinks her trouble quite gone. At this stage a change from a large and noisy town school to a small country one will probably result in her cure. But if she continues to work under the same conditions permanent hoarseness is developed and loss of voice follows, at first towards week-ends and then at the close of each day's work. The amount of laryngeal

disturbance, in fact, is directly proportionate to the number of hours she teaches. No doubt there are faults in her voice production. She speaks at too high a pitch—much too high—and even shouts at times, and she has no knowledge of breath control. She has to make herself heard in noisy class-rooms, either due to more than one class being taught in the same room, or from the proximity of noisy streets. The room is often badly ventilated and the atmosphere full of dust and other impurities. But all these facts are equally true of the male teacher, and yet he rarely suffers. What is it that makes the difference? Well, her voice is naturally weaker, and she forces it more in her effort to be heard and in maintaining discipline. At the same time, her organs are more delicate, and, therefore, more easily injured, and often she is anæmic and her general health is below par, either from the strain of study for examinations or from other causes. In a word, the voice troubles of the female teacher are due to over-use of an organ inherently delicate or rendered so temporarily by the condition of the general health. Like the singer, she also suffers from vocal disturbance at her menstrual periods, but continues to use her voice without any rest.

When we examine the larynx in these patients we may find some slight chronic congestion, but oftener there is no change in colour. Frequently we see at the junction of the anterior third with the posterior two thirds of the ligamentous glottis a persistent pearl of mucus, which vibrates between the cords on phonation. If this is cleared away, we may find at the same situation the faintest elevation on the edge of each cord, or well-defined nodules may be present. We know that histologically these may be merely epithelial thickenings, or small fibromata, or retention cysts.

Much discussion has taken place as to what determines the site of those nodules. Is it due to attrition of the cords at this point, or that this is the spot where vibration is most active, or to the fact, established by Fraenkel and others, that at this point in the cords there is often the opening of the mucous gland? The idea that they correspond to a nodal point must be abandoned. The observations of Oertel with the stroboscope threw light on this question. He found that in the production of the upper register of the voice the most active vibration takes place along the inner margin of the cords, and that if there be a slight catarrh of the larynx, tiny pearls of mucus gather at the point of greatest movement, which exactly corresponds to the situation where we find nodules develop. From these facts we may conclude that the

nodules in female teachers result from inflammatory thickenings occurring at the points of most active vibration when the voice is over-used at too high pitch. Attrition may come in as a secondary cause after the nodule has begun to form.

An important point to remember in these cases is that the nodules alone are not the cause of the laryngeal disturbance, for they have been observed in singers and others whose voices were in perfect condition. Their removal, too, will not always cure the voice trouble, for there are often chronic inflammatory changes in the underlying muscle and in the elastic tissue of the cords. Quite recently I saw a case which illustrated the etiology of this affection in a young married lady who was neither a singer nor a teacher, but merely a lively and incessant talker. She had a few months before coming under my care developed a passion for motoring, which she indulged in daily, generally accompanied by a few friends, with whom she incessantly talked in a voice much above her normal pitch. The result was a slight chronic laryngitis with typical nodules, just as would have happened if she had been an elementary school teacher.

The fourth class of voice users, or perhaps I should call them voice abusers, is chiefly of interest as illustrating the extreme forms of local injury to which the larynx may be subjected. Here the voice is used violently in shouting or bawling, and every rule of production is set at defiance. The external conditions are also unfavourable, as it is in the open air, amidst noisy surroundings, or in dusty rooms where the voice is used.

The immediate effect of such violent vocal strain may be the rupture of some muscular or ligamentous fibres in the cords, or a more or less extensive submucous hæmorrhage, or an acute paralysis of the "vocal" muscle. Even rupture of the trachea has occurred in rare cases. The immediate result in these cases is extreme hoarseness or complete loss of voice. As the saying is, the voice "has been shouted away." My experience of these acute lesions has been gained among my friends on the Liverpool cotton market after an exciting day, when some American speculator had been trying to corner the market.

The more chronic lesions take the form of a hypertrophic laryngitis with the development of pachydermias in the usual situations, around the vocal processes and in the interarytenoid space. The amount of vocal disturbance in these patients varies from slight dysphonia to complete loss of voice, and is by no means proportionate to the changes visible in the laryngoscope. In fact,

I have often been surprised at the amount and quality of the voice work done by persons with extensive chronic inflammatory thickenings in the larynx. It is doubtful how far these advanced inflammatory changes are the result of voice use alone and how far the influence of alcohol, tobacco, and syphilis must be taken into account. Many will try to persuade us that, like Falstaff, they have lost their voices "with halloing and singing of anthems" and never mention the "intolerable deal of sack" which has been consumed in between.

For the sake of completeness, I have put in a separate class, those who for professional purposes deliberately use the voice in a wrong method or outside its natural compass. The actor, in playing old men's or so-called character parts, the society entertainer, who strives to reproduce all varieties of human speech, the choirmaster, who signs alternately with his sopranos and his basses, and that abomination of the English choir, the male falsetto, all come under this head. It is a class which has furnished me with many patients, and though they are liable to all the lesions met with in other voice users, they have, in my experience, shown an excessive proportion of benign laryngeal growths in the form of soft fibromata.

I have said nothing about the effect of pathological changes in the upper air passages in producing laryngeal disturbances, as that is outside the present discussion, nor have I entered into details as to treatment. The latter deficiency will, no doubt, be made good by those who follow me in opening this debate.

INTRODUCTORY PAPER.

By W. E. CASSELBERRY, M.D.,

Chicago, U.S.A.

Professor of Laryngology and Rhinology in North-Western University Medical School; Laryngologist to St. Luke's and Wesley Hospitals, etc.

THAT which is merely "use of the voice" for one person may be overuse for another; hence, both are pertinent to the present discussion. To the singer with failing voice, to the orator with lack of carrying quality, the teacher with recurrent aphonia, the clergyman with spastic vocal contortions, and to a host of business folk—dictating correspondents, salesmen callers, and others, the gathering of knowledge tending to the preservation of the voice is of weighty importance.

The laryngeal disturbances produced by voice use may be grouped under three divisions—vascular, cellular, and neuromuscular. Strenuous vocalisation excites vascular congestion even in a vigorous larynx, as may be observed in singers after the rendition of difficult rôles, and in clergymen on the Monday morning following an arduous Sunday. When the larynx is previously weakened by disease hyperæmia is induced by correspondingly less vocal effort, ordinary conversation then sufficing to maintain congestion of the larynx and consequent relaxation of the vocal muscles, as exemplified by the following case:

(1) An incessant talker, while suffering from acute laryngitis, ran the gamut of sprays and pigments, but permitted no rest to the larynx. Finally, discouraged, and contemplating a change of climate, at great business sacrifice, he consented to a strict adherence to pencil and writing pad, which sufficed to restore his voice in so short a time that it was jocularly referred to as a miracle.

This incident is mentioned to emphasise the well-known but much-neglected principle of the need of comparative or even complete vocal rest to an acutely inflamed larynx as a means of treatment. The same principle is of value as a preventive measure, the neglect of which was illustrated in the following case:

(2) An exceptionally forceful concert singer had been in excellent voice prior to an attack of acute laryngitis, during which she persisted in meeting her singing engagements. Shortly afterwards an angioma of one of the vocal cords was seen to have developed. In confirmation of its origin through a persistent hyperæmia—I quote from Wyatt Wingrave⁽¹⁾—that microscopically laryngeal angiomas “show an increasing vascularity from a simple hyperæmia up to permanent distension and thrombosis.” In order to certify its permanence in this case I delayed interference for many weeks, but succeeded then in restoring her voice by a light galvano-cautery application.

Moreover, if there be disease of the accessory vocal organs—for example, the pharynx, which is more than a mere resonator—the larynx functionates at a distinct disadvantage, and then vascular congestion, muscular atony, and even cellular hyperplasia of the vocal cords, is liable to result from what may be little more than a customary use of the voice.

CASES 3 and 4.—A vaudeville singer was handicapped by an unreliable voice; he had laryngeal congestion with atony of the cords, accompanied by redness and thickening of the pharyngeal pillars due to retention tonsillitis in the deeply-placed bases of imperfectly operated tonsils. A radical tonsillectomy remedied the whole difficulty, his voice becoming thoroughly competent. *Per contra*, a country clergyman, who continues to endure a chronic retention tonsillitis, meanwhile attempting to preach thrice on Sundays and to furnish the music as well, suffers much from voice fatigue and many periods of vocal disability.

These experiences, being typical, justify formulating a second

principle of prevention which is known to laryngologists, but not yet generally recognised, although of great economic value to vocalists, namely, to conserve the voice under maximum use, diseases of the pharynx or nose should be promptly remedied.

Although masters disagree as to what constitute right or wrong methods of singing, it surely is wrong, in technical phrase, "to force the voice," whether in singing or speaking—that is, to compel higher notes than are natural to a given register, to maintain an abnormally loud intensity by reinforcing the blast, to habitually pitch the voice into the falsetto register, or to time over-work the muscular mechanism. Likewise, to attempt even one's customary *role* of song or speech at a time of disability, either of the larynx or accessory vocal organs, is equally a forcing of the voice.

The fact that "singer's nodes" occur also in speakers and others who by habit or necessity force the voice in some of these particulars indicates that the method of singing known as "striking the glottis," although possibly the main cause with singers, as explained by Holbrook Curtis, is not the only wrong or forcing method which is capable of exciting these minute cellular hyperplasias at points of attrition. All artificiality of method certainly can be excluded by reason of youthfulness in the following instance of typical "singer's nodes" observed in a boy who did not sing.

CASE 5.—A boisterous lad, aged nine, described by his parents as an incessant talker and shouter, whose voice always dominated the field of boyish sports, had suffered increasing hoarseness for a year. A small adenoid has been operated on simply for the purpose of exclusion. The laryngeal image plainly disclosed a pair of vocal nodules on the edge of the vocal cords at the junction of their anterior and middle thirds.

The formation of nodes during that sort of forcing of the voice which is impelled by ordinary use through periods of disease of the larynx or accessory vocal organs is exemplified by two cases:

CASES 6 and 7.—The former, a choir singer, with chronic retention tonsillitis, which she disregarded notwithstanding frequent inconvenience, until a pair of vocal nodules causing roughness of the voice compelled attention. The outcome was unusually fortunate for this affection, as the comparative ease of vocal execution which followed a fragmental tonsillectomy enabled her to continue "in voice" in spite of the nodes, which, when last seen, had grown smaller, as if gradually to disappear. In the latter case (7) a kindergarten teacher, with unsuspected incipient tuberculosis, presented an anæmic larynx, paretic vocal cords with a pair of nodes, but no other inequalities. Rest being advised, she left the city for six months, and on her return tuberculous pyriform swelling of the arytenoids was present, but the nodules were gone. The inference is that they had formed under the stress of her kindergarten vocal teaching, which, for a larynx partly disabled by incipient tuberculosis, amounted to a forcing of the voice.

My observation of papilloma of the larynx in adults serves merely to support the general experience that voice users are especially subject to it. This inference is the more reasonable since, as stated by Wyatt Wingrave, ⁽²⁾ "hyperæmia, if sufficiently prolonged or repeated, may result in the histological dystrophic changes" which constitute a papilloma. Of course, there are other etiologic factors, but excessive vocalisation and consequent hyperæmia were the only evident causes in the

cases (9 and 10) of two middle-aged gentlemen, one a Board of Trade operator accustomed to extreme vocal effort on the "floor," and the other a political campaign speaker, much in demand at open-air meetings on account of his sonorous bass. Each was obliged to relinquish his vocation on account of increasing persistent hoarseness due to a characteristic papillated neoplasm of the anterior half of the right vocal cord, removal of which, by intra-laryngeal methods, eventuated in perfect recovery without recurrence during periods of ten to fifteen years, although neither exacted as much use of his voice thereafter.

In designating my third division of disturbances of the larynx due to voice use as neuromuscular, I am conscious of entering upon a phase of the subject of which, even after all is said, our conception is still but vague.

Lesions cannot be said to be strictly muscular unless implication of the peripheral nerve-endings can be excluded. However, the rupture of the fibres of the internal tensor muscles during their use is certainly a purely myopathic lesion. This sort of functional traumatism is said to happen sometimes to singers, but my own observation of it is limited to the case of a Board of Trade operator who—

(Case 11), while vociferating during a panic "on change," felt suddenly a twinge of pain, and found himself voiceless. On examination a few hours later the right vocal cord appeared as if it had been struck by a hammer—ecchymotic, swollen, relaxed. The left cord was normal.

Muscular strain from forcing the voice, which affects chiefly the internal tensor muscles—the thyro-arytenoidei interni and perhaps the arytenoideus—may be viewed simply as a milder degree of functional traumatism, and therefore chiefly a myopathic lesion. In inflammatory paresis the terminal nerves are thought to participate; therefore it is neuromuscular, while in the following notable instances of unilateral double tensor paresis and of dysphonia spastica the neuropathic element predominated.

CASE 10.—C. G.—spoke, in part, in the low, measured tones of the cultured but his voice, on approaching the several climaxes of a sermon, would suddenly break into the falsetto register, like the high-pitched enunciation of certain persons in anger but intensified by an enforced blast. It sounded as if it were very wearing to the larynx, and toward the close the exhausted mechanism would

weaken, become hoarse, and emit jerky and scarcely audible tones, defects which, with time, so augmented as to threaten his professional career and to strongly suggest an impending dysphonia spastica. On examination there was noted pronounced paresis of the left vocal cord, its excursion on phonation falling far short of the middle line. On close analysis it proved to be a conjoined paresis of the external tensor muscle (crico-thyroidens) and the internal tensor (thyro-arytenoideus internus). The paretic cord and the arytenoid seemed to occupy a lower vertical level in the larynx than the sound ones, so that their edges did not meet in the same horizontal plane, which is stated by Gottstein to be a sign of double tensor paralysis. The right arytenoid would override the left, but the picture was not identical with recurrent nerve paralysis, and the usual causes of the latter were excluded by subsequent observation through a period of ten years. After a few weeks' rest he was able to resume preaching by complying with my advice to restrict the delivery to his more pleasant conversational style. The cord recovered in large measure after some months, but relapsed the following year as he lapsed into the old emotional falsetto style; it again recovered, but three years later again relapsed. During the past six years his more quiet delivery has become habitual, the cord remaining fairly well and just now quite normal in appearance.

The following case of dysphonia spastica, for the purpose of comment and comparison with the preceding case, I abstract in part from the published report by Dr. John Edwin Rhodes,⁽³⁾ as the patient was observed by myself only informally as a friend, although over a long period of time. I will take occasion to add the termination of the case and to amplify a few other details.

CASE 11.—C. L.— was a prominent clergyman, who first came under my notice in 1883, when in his fifty-fourth year, at which time his voice was beginning to show the earliest definite indications of this phenomenal disease. In opening conversation he would first strike an attitude by posing his head backward and aside as if in an effort to facilitate an impeded utterance. The words, when they came, seemed to be popped out under high pressure, and had a disagreeable tense clang, the fewest possible being made to suffice. In preaching he did better, but the pitch was erratic, with much falsetto, and syllables were sometimes suppressed. Three years later, on seeking advice, Dr. Rhodes observed paresis of the right cord, and again observed it five months later; but at subsequent examinations this feature was not noted, possibly having been incidentally due to the forcing of the voice in the face of its disability. In this connection I would recall the paresis of one vocal cord in conjunction with the falsetto habit in the preceding case (Case 10).

In 1893, ten years from the time of my own first observation, he was obliged to retire from the pulpit, having become nearly inarticulate in spite of long periods of rest and varied treatment. In attempting utterance, spasmodic contortions of the facial muscles, contractions of the neck and chest, and congestion of the face would precede by some seconds the jerking out of a few words which came finally, perhaps in a loud oratorical tone, or in a hoarse whisper, or falsetto key, the pitch being uncontrollable.

About this time quite a sensation was caused by the announcement that a new treatment by a new physician had finally effected a cure and that he would preach the following Sunday, when to my astonishment he spoke understandingly, albeit

far from well. It subsequently transpired that the new treatment consisted merely of spraying a cocaine solution into the nostrils, that its beneficent effect endured but an hour and was followed by "terrible reactionary suffering," which caused him to limit its use to occasions of special church celebrations. However, the cocaine expedient did enable him occasionally to "make a few remarks," when otherwise he could not have done so.

During the next ten years he grew worse, notwithstanding an almost continuous silence. Attacks of asthmatic dyspnoea conjoined with heart weakness, both said to be of a nervous functional nature, helped towards a final exhaustion.

Now, what was the exact "laryngeal disturbance" in this case? in what manner was it "produced by voice use"? and how did cocaine serve to partially suspend the disability?

Rhodes, ⁽⁴⁾ following Mackenzie, ⁽⁵⁾ ascribed the laryngeal impediment to spasmodic contraction of the tensor muscles of the larynx which he was able to observe in another similar case but not in this one, in whom at the worst stage the muscular movements as seen in the laryngoscope appeared normal. Semon ⁽⁶⁾ refers to several cases which presented symptoms identical with this one, in all the worst of which he observed laryngoscopically a spasmodic sphincter-like closure of the larynx on attempts at phonation, indicating, in addition to the tensors, a spasm of the adductors. In other words, the larynx under cortical superexcitation overdoes its effort at tone-formation, contracts too quickly, too violently—that is, inco-ordinately with the other elements of speech, ideation, volition, respiration, articulation; hence it fails to emit the tone at the proper psychological moment—a sort of laryngeal stammer. Like common stammer, it is aggravated by the intuitive accessory muscular efforts of the patient to make himself talk as evidenced by facial and chest contractions, but, unlike common stammer, the habit is induced later in life during the course of years, and is acquired chiefly by professional voice users, notably clergymen, through unnatural and enforced methods of address in which the high-pitched falsetto register is a factor. The emotional temperament, which is a natural characteristic of clergymen, is a predisposing condition, in so far as it is prone to find expression in the falsetto key, and otherwise to render speech unstable; and if to emotionalism is added that dyscrasia—whether it be a pure neurosis or a toxæmia—which underlies asthma, hay fever, nervous dyspepsia, and nasal reflexes, the predisposition to dysphonia spastica may be said to be accentuated. Phonetic adduction of the vocal cords is for the purpose of speech in expression of thought; hence, the major adductor centres are located in the cerebral cortex, and it is conceivable that under years of emotional impulses leading to high-

pressure speech that these centres should acquire a vicious habit of spasmodic violence in action.

The third principle of prevention which I seek thus to establish is that voice users, especially preachers, should avoid falling into the custom of using high-tension speech or the falsetto register, for the reason that it not only does local violence to the neuromuscular mechanism of the larynx but, being an expression of emotionalism, it is liable to habituate the cortical motor centres to an undue excitability, leading to dysphonia spastica.

It remains to suggest an explanation of the action of cocaine, whose salient effect is local anæsthesia, in ameliorating a spasmodic dysphonia, primarily of centric origin. Two premisses may be restated: first, that the fundamental laryngeal spasm was aggravated by accessory spasms, some intuitive, some doubtless reflex, as co-ordinated articulate speech is dependent in part upon a local feeling which guides the play of the delicate muscles through a reflected stimulus. Secondly, that the cocaine only partly, not wholly, ameliorated the dysphonia. It is a fair deduction that by overflow of the nasal cocaine spray, into the throat, this reflex stimulus was dulled, and to this extent only was the disability ameliorated.

REFERENCES.

- (1) Wyatt Wingrave, *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, March, 1906, p. 61.
- (2) *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, May, 1906, p. 218.
- (3) "Spasm of the Tensors of the Vocal Cords," by John Edwin Rhodes, M.D., *Trans. Amer. Laryn. Assoc.*, 1898, P. 197.
- (4) John Edwin Rhodes, *Trans. Amer. Laryn. Assoc.*, 1898, p. 194.
- (5) Morell Mackenzie, "Diseases of the Throat and Nose," vol. i, p. 474.
- (6) Felix Semon, Heyman's "Handbuch," Band. i, S. 753.

DISCUSSION.

Dr. G. HUDSON MAKUEN thought this discussion very opportune. Laryngologists gave too little attention to what must be regarded as the chief function of the larynx, namely, vocalisation, and were apt to overlook the possibility, and even strong probability, of the development of grave laryngeal disease as a result of faulty methods of vocalisation. As a rule, pathological results did not follow the physiological use of the voice. The larynx, like other organs in the body, usually grew strong with physiological exercise, but the trouble was that in the majority of instances the exercise was unphysiological. The origin of vocalisation was, in his opinion, the most abused of all the organs of the body. This was due to the fact that man's vocation was generally prejudicial to its normal use and development. He desired, therefore, to emphasise the importance of vocal training, not only as an æsthetic measure, in order to

make the voice more agreeable and effective in speech and song, but also as a measure both for the prevention of pathological lesions in the larynx and pharynx, and for the relief and treatment of these when once they had appeared. The man that went into the game of football without preliminary training would surely come to grief, and just as surely would disaster follow hard upon the man that undertook some extraordinary use of the voice, as in public speaking and singing, without adequate preliminary training and practice. The laryngologist had not quite fulfilled his mission until he had fitted himself to become a teacher of the teachers of vocalisation. It was only in this way that they could help to place this matter of vocalisation upon a scientific basis.

Dr. PEYRE PORCHER (Charleston, South Carolina) urged the advisability of rest in all laryngeal disease with one exception, when the voice should be forced—namely, bilateral adductor spastic (pseudo) paralysis. He expressed surprise that authorities permitted patients with tuberculous disease to use their voices during treatment. He reported several cases of tuberculous laryngitis cured by rest of two or three months' duration.

Dr. STCLAIR THOMSON (London) emphasised the possibility of hoarseness without surface changes in the larynx, as also of the presence of vocal nodules without alteration of voice. These nodules might develop rapidly and disappear quickly. Rest in the early stage was of primary importance.

Dr. HENRY SMURTHWAITE (Newcastle-on-Tyne) showed paintings of a case of polypus of the larynx with aphonia, also one of paralysis of the internal thyro-arytenoideus in a hysterical patient.

Dr. P. WATSON WILLIAMS (Bristol) said the lesions resulting from improper voice use were essentially inflammatory, the vocal cord lesion being almost always partly or entirely a myositis. Thus the key to successful treatment lay in remembering that the vocal cords were muscles, and that the cords as seen were the tendons of the internal thyro-arytenoideus muscles. Rest, then, was the most important of all methods of treatment, and could not be too strongly emphasised. First, voice rest, and second, general rest and hygienic measures. The recurrence of the mischief would have to be subsequently prevented by physiological voice training before the patients' return to their avocations.

The PRESIDENT referred to the importance of careful diagnosis. Nothing was more deplorable than the mistaking of early tuberculosis for faulty voice production—an error which was by no means unknown. Fortunately, many voice trainers were sufficiently sagacious and conscientious to call for the advice of the physician or laryngologist. It was necessary to recognise and treat such constitutional conditions as anæmia or general debility and such local ones as laryngeal neoplasms or paralysis. He had seen students whose vocal disability depended mainly on over-study, over-anxiety, and defective alimentation. In the presence of paresis of the internal tensors he was often at a loss how to substitute exercise for rest of the voice. Rest might be continued too long in these cases. Among other injurious factors in the laryngitis of school teachers was the chalk dust from the blackboard; a damp sponge should be used instead of a dry duster. Preachers in the Anglican Church often suffered from intoning on a note unsuitable for their voice, while those of some other denominations were affected owing to the violent emotional enunciation required by their congregations. Dr. Hunt had properly dwelt on the errors in deciding on the nature or class of the voice. Dr.

Joal of Mont d'Or was of opinion that the nature (*tessiture*) could be judged of by means of the laryngoscope, and the President, while not going so far as Dr. Joal, thought this was often a reliable guide. He (the President) thought many voices were injured by forcing the "chest" register (he adopted the expression for the sake of being clearly understood) too far upwards. He was convinced that in the ordinary singer there was a thinning of the vocal cords at the change from the chest to head register, as shown by transillumination during the singing of the same note first by the "chest" and then by the "head" voice. An eminent Welsh singer insisted that there were no varieties of register in the voice, but one continuous register throughout the whole range. The President could conceive of some exceptionally gifted individual being able to apply from tone to tone the mechanism (for thinning the cords) which ordinary singers employed in passing from one register to another, in combination with the usual increasing tension of the cords, but he thought this very exceptional, and that as a rule the register must be respected. The remarks of Dr. Casselberry and StClair Thomson concerning nodules were particularly important, as showing that there were often contributory factors present at the same time requiring attention more than the nodules. It was sometimes perhaps a misfortune to the voice user for the nodules to be discovered, as local treatment was liable to do more harm than good. He considered a discreet use of Dr. Holbrook Curtis's exercises often of the highest value, and regarded them as a means of coaxing the voice on to the "head" register, thereby thinning the cords so as to diminish the necessity for increased tension and at the same time diminishing the vascularity by compressing the vessels. Defective breathing was often a factor, and respiratory exercises could be advantageously practised in silence or with the whispering voice. He had referred to the danger to otology proper threatened by the brilliance of surgical otology. He thought that rhinology was, in a way, a source of danger to rhinology, but not a danger to the larynx, and he was sure most would agree with Dr. Graef as to the value of attention to the nasal passages both directly and by lessening activity in the larynx itself. A great German laryngologist was credited with advising his *confrères* never to touch a singer's larynx. This sweeping statement contained a large element of wisdom. The President had deprecated the superficial study of the anatomy of the throat on the part of singers, as it centred their attention on the organ instead of on the voice.

REPLIES.

Dr. MIDDLEMASS HUNT, in closing the discussion, expressed the opinion that where laryngeal nodules rapidly appeared and went they were really cases of obstruction to a mucous gland in the edge of a cord, as described by Fraenkel. As to the origin of nodules from misuse of the *coup de glotte*, while recognising the excellent work done in this subject by Dr. Curtis, he pointed out that in a vast majority of cases there was no question of such misuse—for example, in female teachers and non-singers—and he recorded a case seen quite recently in which nodules developed in a singer doing much hard voice work, whose voice had been trained entirely by using the soft attack, the vowel sound "ah" being preceded by an "h."

Dr. W. E. CASSELBERRY, in reply, said that he quite agreed with Dr. Porcher and the others regarding the value of rest to the voice within

limits. He would recall the case of the kindergarten teacher who had vocal nodules as the result of voice use in the presence of incipient laryngeal tuberculosis. Six months' rest caused disappearance of the nodes, although the tuberculosis progressed. Rest, however, had its limits, and after a time gentle exercise was of benefit. The whispering voice as a substitute for loud tones had the objection of tending to a whispering habit difficult to break. Also it was idle to order repeated periods of rest, when by putting the pharynx and nose into a proper condition the need of rest might be avoided. After all, it was the use of the voice and not the rest that our patients desired.

SKIAGRAPHY AS AN AID IN THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE ACCESSORY SINUSES OF THE NOSE, WITH EXHIBITION OF PLATES.

By C. G. COAKLEY, M.D.,
New York.

In the fall of 1904 my friend Dr. F. C. Ard brought from Freiburg, Germany, two negatives showing projections of the frontal sinuses and ethmoidal cells from exposure to the X rays. Professor Killian had been employing this method for about a year previously. I showed these plates to Dr. E. W. Caldwell, in charge of the Gibbs X-ray laboratory at the University and Bellevue Hospital Medical College. He immediately set about skiagraphing some of our dispensary patients suffering from sinus disease. The first plates made were only moderately successful. In some cases the outlines of the sinuses could be but faintly discerned, and many failures owing to improper tubes and exposures were recorded. Since that time Dr. Caldwell has skiagraphed for me about 200 patients, some of them dispensary patients, others private ones. I have operated upon the frontal sinuses of 46 of these 200 cases, thereby enabling me to compare the size and shape of the sinuses as found on operation with the same as they were shown in the skiagraphs. The conclusions which I have embodied here are the results of my work for the past two years in this line. All of the technique of skiagraphy has been developed by Dr. Caldwell, who is to present at the annual meeting of the American Roentgen Ray Society, at Niagara Falls on August 28 the latest technique by which he is now enabled to secure in almost every instance a satisfactory negative.

My rôle in the work has been that of furnishing patients for

Dr. Caldwell and interpreting the plates. From lack of experience on my part, and from the poorer quality of the earlier plates, it was not possible to get as much aid at first as we can now from the better plates and greater experience in reading them. It is not very difficult to obtain a plate which will show the presence or absence of the frontal sinuses, their size (that is, height, breadth, and depth), and one that will show some, perhaps all, of the subsidiary septa that may be present. Such plates may suffice to determine beforehand the type of operation that is best suited for the patient, but the plate may be of no value for determining the presence or absence of disease in the sinuses.

I have become thoroughly convinced that an excellent skiagraph can be depended upon to demonstrate, not only the size of the sinuses, but the presence or absence of disease as well. This I believe to be one of the greatest aids in the diagnosis of sinus disease which we have yet employed.

Classifying the results of my observations in reference to the various accessory sinuses:

(1) THE FRONTAL SINUS.

(A) *Certainty of demonstrating the presence or absence of sinus before operation.*—A good negative will show the presence or absence of a frontal sinus. I have one plate in which the frontal sinuses did not project above the orbital arches; in the case of children the small size of the sinuses can be shown, and the exact height and width of the sinuses are easily demonstrated. The frontal sinuses are mainly shown budding out from the upper region of the ethmoidal area as they are known to develop embryologically. I have a plate which shows a good-sized, well-developed frontal sinus on one side and absence of the sinus on the other.

(B) *Accurate determination of size of the sinus.*—We have found that the frontal sinuses have not in any of our operative cases appreciatively varied from the height and width as measured in the skiagraph. It would be comparatively easy to get distortion were it not for the fact that the plate rests directly on the forehead of the patient; a possible element of error will arise if two pictures are taken with the rays passing through the head at different angles to the forehead. In other words, if the ray is made to enter above the occiput and another picture taken with the ray below the occiput, the height of the sinuses will be different in the two skiagraphs owing to the difference in the projection of

the sinus above and below the level of the occiput. This portion of Dr. Caldwell's apparatus has been very conveniently arranged so as to have a constant angle of projection for the sinuses.

(c) *Situation of septum between two sinuses.*—The septum between the two sinuses can usually be easily determined. It is seldom situated absolutely in the median line, but often bent to one or the other side, as we know from experience on the cadaver. One is very apt to mistake the projection forward of the spine of the ethmoid and the line of junction of the interfrontal suture for a median septum unless the plate is carefully studied.

(d) *Location of partial septa.*—Partial septa in the frontal sinuses are very plainly shown in a good plate, always more plainly seen in a healthy sinus than in a diseased one.

(e) *Probable presence of an orbital recess.*—Whenever in a good skiagraph a dark, slightly curved horizontal area, almost parallel with the upper border of the orbital arch, is seen, we have found such patients have had a recess extending backwards over the roof of the orbit to a greater or less extent. This finding has been so constant that I feel quite sure that such an area can be relied upon as indicating a backward orbital projection of the frontal sinus.

(f) *Disease determined by an excellent negative.*—In our earlier plates, as the negatives obtained became more clear and distinct, I noticed that there was invariably a cloudiness over the area occupied by a diseased frontal sinus, and an indistinctness of the outlines of that sinus as compared with those of the healthy sinus. This, of course, could be more easily observed where one sinus alone was involved than where bilateral frontal sinusitis existed. This occurrence was so constant that over a year ago I made the statement that I believed in some cases we could use skiagraphy for diagnosing the pathological conditions as well as the form of the sinus.

Last fall I asked my friend and associate, Dr. Chisholm, to undertake a series of experiments to determine, if possible, the cause of the cloudiness in a diseased frontal sinus. These experiments upon the cadaver showed that any fluid injected into a frontal sinus caused a shadow, and that membrane containing moisture caused a marked shadow as compared with the same membrane when dry. As a result of his experiments there can be no doubt that the shadow in the skiagraphs is the combined result of the thickened mucous membrane, and any fluid which may be present in the cavity at the time the exposure is made. Of course one must be careful to exclude any possibility of fogging a plate,

for the appearance of an affected frontal sinus is not unlike that of fogging.

On two occasions when it was impossible to be positive as to the extent of frontal sinusitis from any examination which I could make, the cloudiness over the affected frontal sinus induced me to make a diagnosis of frontal sinusitis. The cases were operated upon; in one the cavity, only moderately large, was filled with thick muco-pus without any increase whatever in the thickness of the mucosa. In the other just the opposite condition was found—namely, marked œdematous infiltration of the mucosa, with only a few drops of secretion in an enormously large frontal sinus.

(g) *From information obtained from the above determining in advance the best method of operating.*—Feeling as I do that no one method of operation will eventually be found to be most serviceable in the treatment of all sizes of frontal sinuses, we have in the X ray a very great aid in determining in advance the type of operation which is best suited to the individual case.

(2) ETHMOIDAL CELLS.

The width of the ethmoidal cell area—that is, the space between the nose and the orbit—is easily demonstrated. This is of very great help, especially when one operates upon these ethmoidal cells intra-nasally. I have been very much interested in noticing how narrow the ethmoidal area is in some patients and how very wide it is in others. The height of the ethmoidal cell area is also well shown, and the relations of some of the ethmoidal cells to the frontal sinus easily demonstrated. It is not uncommon to find some cells in the ethmoidal region cloudy and others clear, showing absence of disease. Some of my plates also have shown a line of cloudiness extending from the frontal through some or all of the ethmoidal cells and continuous with the cloudiness involving the antrum. In two such cases intra-nasal operations on the antrum failed to relieve the suppuration until the frontal sinus and ethmoidal cells were opened externally, after which the antrum ceased discharging.

(3) MAXILLARY SINUS.

A diseased maxillary sinus will in a good negative have the same cloudy appearance as do the frontal and ethmoidal sinuses. I do not believe that one would ever employ skiagraphy for a maxillary sinus alone, unless it were to determine the presence of a foreign body or a partially-extracted root of a tooth as the exist-

ing cause of the continued suppuration in an antrum. Such a foreign body can easily be located by a skiagraph.

(4) SPHENOIDAL SINUS.

A side view of a sphenoidal sinus often enables us to determine whether a large or a small sinus is present. I have been unable to obtain any greater information than this as to the sphenoidal sinus. The central situation of this sinus and the varying superimposed bony structures through which the rays have to pass make me sceptical as to whether a diseased condition of this sinus can be determined in this way. Certainly a study of my plates does not warrant me in venturing an opinion on the pathological condition of the sphenoidal sinus.

A STUDY OF THE ANATOMY OF THE ACCESSORY SINUSES OF THE NOSE, BASED UPON RECONSTRUCTIONS OF TWO HEADS.

BY HANAU W. LOEB, M.D.,

St. Louis.

[*Abstract.*]

REFERENCE is made to the method of reconstruction as outlined in the writer's paper before the American Laryngological, Rhinological, and Otological Society at its meeting in June, 1906, by means of which it is possible to reproduce the sinuses in their proper relations, giving anterior, lateral, and superior views. This makes it possible to compare the various sinuses with each other and with those of other heads.

The two heads studied were those of two men, one white and the other black, of about the same height, age, and weight. The very great differences which exist between the sinuses themselves and the corresponding ones of the two heads are clearly shown in the reconstructions. In this way only can exact measurements of the individual sinuses be ascertained.

While no definite conclusion can be drawn from a study of only two heads, it is clear that the method furnishes the means of more closely studying the sinuses and suggests the likelihood of greater understanding of the varieties, relations, and functions of the sinuses and the causes which lead to their irregular distribution.

Serial sections of both heads were exhibited, with drawings from the sections and reconstructions in various planes, showing relations and comparisons of the sinuses.

A SPECULUM FOR EXAMINATION OF THE PYRIFORM SINUSES AND THE UPPER END OF THE ŒSOPHAGUS.

DR. HARRIS P. MOSHER (Boston) showed a speculum which he described as a combination of Kirstein's autoscope and a bivalve speculum. It was to be used only under general anæsthesia. By means of this instrument the pyriform sinuses and the first inch of the œsophagus could be examined and operated on. In a majority of cases the greater part of the vocal cords could be exposed. A set of instruments of suitable shape and length for operating with this speculum accompanied it.

Dr. CHEVALIER JACKSON said he considered the instrument ingenious, and a valuable addition to their armamentarium.

SUBPERIOSTEAL ABSCESS OF THE FOREHEAD, COMPLICATED WITH THROMBO-PHLEBITIS OF THE SUPERIOR LONGITUDINAL SINUS, EXTENDING TO THE LATERAL SINUS AND JUGULAR VEIN OF THE OPPOSITE SIDE; MENINGITIS; DEATH; NECROPSY.

BY DR. V. DELSAUX,
Brussels, Belgium.

THROUGH the kindness of the President, I have been invited, not only to attend the present meeting, but also to read a paper on a subject which, I hope, will be of some interest.

Two months ago there came under my treatment at St. John's Hospital, Brussels, a woman, aged twenty-nine, who was complaining of severe headache, sleeplessness, fever, and prostration of two days' duration. Before that time she was quite healthy; she had never suffered from disease of the nose or accessory cavities. She was married, and had two children, both perfectly healthy. On examination of the patient the condition was found as follows:

Pharynx somewhat inflamed, the mucous membrane being relaxed and secreting pus. *Naso-pharynx* covered with muco-pus. *Nose* partially obstructed on the left side by deflection and spur of the septum. The right nasal cavity was quite free, but somewhat purulent in its inferior part, while the middle turbinate and the septum were found to be in contact. After a few minutes' use of cocaine and adrenalin the mucous membrane of the middle turbinate had not become less swollen. The pain remained as

severe as before. By transillumination both the frontal sinuses and maxillary antra were transparent on each side. No exploratory puncture was performed. *Ears*—Nothing particular to be noted. The patient did not complain of diminution of hearing power, pain, or noises in the ears.

Before recommending any surgical intervention I advised the patient to snuff up boro-menthol-cocaine powder every half-hour, to take an aperient, and have a warm foot-bath in the evening. The following day, the condition of things remaining quite the same, I told the patient to come into the hospital, but she refused to do so.

In view of the possibility of purulent retention in the ethmoid cells, the anterior part of the middle turbinate was resected, and, after light plugging with stypticine gauze, the patient proceeded home.

Two days afterwards the woman came into the hospital. I found her complaining of more and more pain in the right side of the forehead above the eyebrow. The pressure upon this point caused severe pain; there was a swelling of the skin, but no fluctuation. The temperature was 102.5° F. in the morning, rising to 104° F. in the evening. Lumbar puncture was immediately performed, as also the examination of the fundus of the eyes.

The day after I found the patient's condition much worse; the swelling of the forehead had greatly increased and fluctuation was present. The notes on the lumbar puncture were as follows: Pressure of the liquid much increased; lymphocytes about 35 per cent., polynuclears 16 per cent., some blood-corpuscles. The examination of the oculi fundus gave the following results: Congestion and subpapillitis on the *left* side (whereas the pain was felt on the *right* side).

I then opened the subperiosteal abscess, evacuating a teaspoonful of pus, and exposed the right frontal sinus, which was found to be quite normal; no congestion or swelling of the mucous membrane; no pus. I put a drain in the sinus opening and another under the periosteum and applied a dressing.

In the evening there was no improvement; the temperature was 104.5° F., and when I saw the patient on the following day the fever was still up to 103.3° F.; the prostration had increased, and there was a swelling behind the left ear. The pressure on the mastoid was very painful, whereas the examination of the ear showed the drumhead free from all swelling; Shrapnell's membrane somewhat rosy but not bulging. Below the mastoid process

there was an extensive œdematous area, but on twice puncturing no pus was to be found.

The prostration increased very considerably in the evening of this day, and death occurred the following night without convulsions, rigors, or paralysis of any kind. I was fortunate enough to be able to get the *post-mortem* examination of this interesting case, which gave the following results:

On opening the skull there was much difficulty in separating the meninges from the bone on the right side. Those membranes being divided in the median line, an intra-dural layer of pus was found over the surface of the anterior part of the right frontal lobe.

The superior longitudinal sinus was thrombosed, while the *left* lateral sinus was found to be so also, but to have undergone purulent disintegration as far as the bulb of the jugular vein. Further on, lower down in the neck, the vein was thrombosed, but there was no pus. Both frontal sinuses, ethmoid cells, sphenoidal and maxillary sinuses were explored without my being able to find the least trace of inflammation or pus. The left ear was also explored with negative results. In the heart cavities there was nothing worth mentioning; the uterus, which was specially examined for obvious reasons, was quite healthy, as well as the kidneys and other organs.

CRITICAL REMARKS.

If I may attempt to give a plausible explanation of this case, it would be the following one:

For some reason remaining unknown a subperiosteal abscess formed above the right eyebrow, rendering the diagnosis uncertain during the first three or four days.

The resection of the anterior part of the middle turbinate had nothing to do with the fatal result.

While macroscopical examination does not enable us to prove any association between the external purulent focus and the obliteration of the superior longitudinal sinus, it is most probable that the microscope would have shown a purulent thrombosis of one of the communicating bone-veins—the so-called “*emissary veins*.”

As to the extension of the thrombosis to the *left* lateral sinus, it is to be supposed that there was a wide and direct continuity between these two blood-vessels.

If we ask what indications the lumbar puncture could give us,

it is to be noted that there was a positive and undoubted change in the lumbar fluid.

At the same time, the examination of the fundus of the eyes revealed a distinct difference between the two optic papillæ, the most considerable alterations being found on the same side as the lateral sinus thrombosis.

On the other hand, the fever was quite continuous—not at all remittent, as commonly happens in the cases of thrombosis of the jugular vein.

Finally, it is to be considered that, no paralysis being present, there were no focal localising symptoms, and consequently no indications for operating on the skull.

CONCLUSIONS.

Thus, my conclusions will be :

(1) A genuine thrombosis of the longitudinal sinus may occur without being an extension of a septic infection from the nose.

(2) Epistaxis, as principal sign of the above thrombosis, may be entirely absent.

(3) The anatomical reason for the more frequent extension of thrombosis of the superior longitudinal sinus to the *left* lateral sinus is the broad and direct communication between these two blood-vessels, found in the majority of instances, while the straight sinus opens rather directly in the right lateral sinus.

(4) A preliminary exploration of the frontal sinus may be performed for the same purpose as exploratory laparotomy in abdominal diseases.

THE VALUE OF THE BLOOD-CLOT AS A PRIMARY DRESSING IN MASTOID OPERATIONS.

By CLARENCE JOHN BLAKE, M.D.,

Professor of Otology, Harvard University.

To pursue a certain line of investigation, to regard its failures and disappointments as opportunities for the acquisition of further information, and, finally, to present the results attained, and the conclusions arrived at, to the criticism and judgment of one's colleagues is one of the gratifying labours which make for advance; for, proved or disproved upon the basis of its primal proposition, the result, in the record of acquired facts, is an addition to knowledge.

The observations here recorded, extending over a period of nearly twenty years, and now first presented in their entirety—previous communications upon this subject having been mainly the reports of cases—though limited to a circumscribed surgical field, have value as a contribution to the general study of the obliteration of surgical dead spaces, and are presented in reference to their significance in this respect as well as for their special purpose.

The earlier operations for the evacuation of the septic contents of the mastoid process of the temporal bone, consisting mainly in a simple perforation of the outer mastoid cortex with provision for drainage and a slow elimination of necrotic trabeculae and cortical bone by a granulomatous process, naturally suggested the possibility of more rapid evacuation by a mechanical procedure. To effect this purpose more complete access to the mastoid interior than that afforded by a simple perforation of the cortex was necessary, and aural surgeons came progressively to make the outer cortical opening larger and to remove the mastoid contents by means of chisels and curettes until the present mastoid operation, as it has since been generally practised, was established. The after-treatment of the more complete mastoid operation consisted, usually, not in simple drainage, but in flushing with antiseptic solutions and in the packing of the resultant cavity, more or less firmly, with aseptic or antiseptic gauze, the usual result being a slow process of healing, attended by more or less painful manipulation extending over a period of weeks or even months. It was while following this, the accepted line of after-treatment at the time, distinctly unsurgical in the light of more recent knowledge, that certain observations suggested the possibility of obliteration of the cavity in the mastoid along more natural lines. Both the antiseptic irrigation, especially with corrosive sublimate solutions, and the tight packing were found to interfere with the process of repair, and the substitution of light gauze packing without the preliminary irrigation was found to leave blood-clots in the more dependent and more remote portions of the mastoid cavity. These clots sometimes contributed, by the formation of firm fibrous bands, to a lessening of the space and sometimes broke down and came away, the apparent cause of the liquefaction of the clot being a small portion of septic material; when the clot remained for a period of forty-eight hours or more and then broke down, the subjacent bone was found to be covered by healthy granulation.

Evidently, then, the blood-clot in the exenterated mastoid

cavity might be expected to act in one of two ways : it might bring about the formation of firm fibrous bands, the framework for a possible extension of the later osseous trabeculæ, or it might, after a temporary persistence, break down, leaving behind it an osteoblastic formation and healthy granulomata as the basis of a slower process of repair. If the blood-clot broke down under the incentive of a septic remnant, it was evident that the hope for its utilisation as repair material in anything more than a very limited area must have its reason in so complete an evacuation of the mastoid contents as to afford a surgically aseptic cavity. The already established mastoid operation of Schwartze, with its inclusive outer cortical opening and extensive evacuation, presented the operative measure, and the investigations of Schedel¹ upon the blood-clot filling, in operations upon the long bones, encouraged the prosecution of tests as to its applicability as a repair process in the mastoid, a bone cavity apparently offering a greater promise of success than that afforded by the long bones, because of its distinctly delimited cortex and the ready accessibility of its interior.

To attain the desired ends, both as to investigative and reparative results, the operation naturally formulated itself upon the following lines. The cut through the soft tissues, sometimes straight, sometimes curvilinear, directly to the bone was made and retracted with as little mutilation of the cut edges as possible ; bleeding was controlled by means of the usual hæmostats, sponging with hot water, and the pressure of broad-bladed retractors, until a dry field, exposing the whole or greater part of the mastoid exterior, was obtained. The opening in the outer mastoid cortex was made so large as to include all areas of defective bone and to afford, in addition, ample access to all parts of the mastoid interior, the whole of the outer cortex, if necessary, being taken away. The contents of the mastoid cavity were then removed by means of chisels and sharp, long-tipped, unfenestrated spoons, down to the inner cortical walls, especial care being taken to remove the bases of the trabeculous projections with their interlamellar diploë, and to search out adventitious cortical cells and, by curetting, make them a part of the general cavity, which was then packed firmly with small, dry, involuted gauze sponges. These sponges were allowed to remain for a minute or more and, on their removal, the interior of the mastoid was subjected to careful visual and tactile examination, with the result, usually, of the detection of some small area of cortical vascularity contrasting with the surrounding clear

surface of the cortical bone; these vascular, or possibly necrotic, areas were carefully curetted, to the extent of entire removal of portions of the cortical wall, down to the underlying muscle or dura, as the case might be, and the procedure of packing and curetting was repeated until, as far as could be determined, the cavity was surgically clean. The cavity was then again packed with small, dry, gauze sponges and attention directed to the soft tissues; necrotic or suspicious areas were excised or curetted, all shreds and remnants removed, and the cut edges trimmed for apposition; the sponges were then removed and the cavity in the mastoid allowed to fill with blood from the cut surfaces of the soft tissues, which, so soon as clotting was evidenced, were brought into apposition and so retained either by gut sutures or by pressure pads, the lower portion of the incision being left free for seepage of serum from the clot.

As a preliminary to the mastoid operation the drumhead, even if perforated, was incised by a crescentic cut following the posterior superior periphery, this cut being sometimes supplemented by the passage of a curved spatula-shaped knife upward and backward toward the antrum, for the division of the horizontal mucous folds present in this locality in a considerable percentage of normal middle ears, and which, in suppurative disease involving the epitympanum, present an obstruction, by their engorgement and swelling, to effective drainage. The canal and middle ear were carefully cleansed and stopped with a gauze wick, which was removed after the operation, and the canal and middle ear again cleansed and plugged.

Even after so thorough and painstaking an operation it was not, at this period of the investigations, deemed wise to leave the mastoid wound undisturbed; on the first or second day the dressings were removed, and, even if there was no evidence of reaction in the wound, a sterile probe was passed through the clot from below upward superficially, or even into the antrum, with the result, not infrequently, of persistence of the clot and the establishment of a sinus through it, which subsequently closed; in some cases the tip of the probe was passed into the antrum and the outer end of the probe raised and lowered until the adhering edges of the outer wound had been completely separated and the clot fairly divided into halves, the result being a serous seepage throughout the centre, the lateral portions of the clot remaining firm. As might have been expected, clots which might have held broke down completely under this invasion of their reparative process, supplemented occa-

sionally by flushing with a corrosive or permanganate solution. In these latter instances the wounds healed subsequently by granulomata, but it was noticeable that the disrupted clot left behind it areas of firm, healthy granulatous lining of the mastoid cavity, affording the foundation for subsequent repair. In some cases, as an experimental procedure, granulomata thus formed were curetted, to free bleeding, with the formation of a secondary blood-clot and apparent hastening of the filling in of the cavity.

By this time, in 1891, the investigations having been about three years in progress—the material employed being mainly the mastoid cases in a three-months' service in each year in the aural department of the Massachusetts Charitable Eye and Ear Infirmary—it had become plain that the use of the blood-clot as a primary dressing not only favoured more speedy elimination of the surgical dead space, but considerably decreased the discomfort of after-treatment.

The blood-clot dressing was inapplicable, apparently, in cases in which it was necessary to maintain access to deeper-seated diseased parts, as in implication of the sinus, and with the presence of extra-dural abscesses, though since that time access has been maintained to the septic parts by gauze drains, allowing the remainder of the mastoid cavity to fill in with blood, with good and speedy results. In cases of extra-dural abscess, so called, the result of a spontaneous perforation of the inner cortical wall, with extrusion of the septic contents upon the dura, it has been possible, by enlarging the opening in the inner cortical wall to the limit of the dural adhesion and subjecting the parts to light curetting and dryscrubbing, to permit the extra-dural abscess cavity to participate, with the mastoid cavity, in the blood-clot dressing. That it was inapplicable under unfavourable systemic conditions in the luetic, the diabetic, and the phthisical was presumed and supported by the number of such cases in which the blood-clot broke down speedily with subsequently slower filling of the mastoid cavity by granulomata and the necessity for frequent stimulation of the repair process, but in others occurred some of the best results.

The more favourable cases were those in which the mastoid disease was an acute supplement of the middle-ear affection, or those in which the suppurative middle ear had been most thoroughly evacuated and drained.

With these differentiations there appeared to be a sufficient percentage of gain, in the shortening and amelioration of the after-treatment, to warrant a continuance in the investigations; but it

was not until 1891, and then by a purely accidental occurrence, that the extent of the protective and reparative capacity of the blood-clot, within the mastoid, was fully demonstrated. The patient, not a hospital case, was a man aged thirty, a musician, in good health, and living under favourable conditions. As the result of an acute infection of the right middle ear he developed a mastoiditis, which came to operation, after failure of the usual abortive treatment—rest in bed, light diet, laxatives, and the post-aural application of the cold coil. The operation included the crescentic peripheral incision of the drumhead, thus leaving the membrana vibrans intact, with the exception of a small perforation below, already established, the division of the tympanic mucous folds, and the mastoid operation as above described, the edges of the wound being closed by apposition. Light probing through the clot into the antrum was practised until the third day, when it was suspended in deference to the accident above mentioned, namely the appearance of an erysipelatous blush, about 1 cm. in diameter at the vertex, accompanied by chill and rise of temperature. Under these conditions the mastoid wound was left untouched, being kept covered merely by a light corrosive dressing.

In this case, as well as in many of the hospital cases, during the more conclusive period of these investigations, it was my good fortune to have the collaboration of Dr. Henry Lee Morse, who has since carried on similar investigations independently. We were mutually agreed both as to the propriety, in this instance, of leaving the mastoid wound untouched, and as to the importance of the conclusions to be drawn from the occurrence.

At the end of twenty-four hours the erysipelatous inflammation had invaded the temporal region and face. The edges of the mastoid wound were completely coapted, and so remained. At the end of ten days the active symptoms of the erysipelas had ceased, the mastoid wound was firmly healed, there was no drainage from the middle ear, the hearing was improving, and subsequently became nearly normal. The mastoid wound had been virtually closed and firm since the fourth day after operation, the mastoid presented a normal contour, and the incision was represented only by a slight linear scar.

With so clear an indication of the availability of the blood-clot, not merely for purposes of partial, but to the end of complete, repair, when applied to a surgically aseptised bone-cavity, the further investigations centred upon the study of the after-treatment of the mastoid wound with reference to the possibility of primary

healing ; a parallel study of the extent of the protective capacity of the blood-clot being made by applying it as a primary dressing in a series of unselected cases.

In these cases the importance of surgical cleansing of the middle ear, either by a preliminary operation or by the tympano-mastoid exenteration, was sufficiently demonstrated and the protective capacity of the blood-clot determined on an average of about forty-eight hours.

The percentage of primary healings of the mastoid wound—that is to say, of cessation of serous seepage from the lower portion of the wound, absence of granulomata, and healing within from seven to ten days after operation—varied; in the different series of grouped cases, from 12 to 50 per cent., the latter being selected cases, though I have the pleasure of knowing that others who have followed these observations have since attained even more than the latter percentage of success.

The conclusions arrived at in regard to the value of the blood-clot as a primary dressing, and as repair material for healing by first intention in mastoid operations, is drawn from less than 250 cases—a small proportion of the cases operated upon at the hospital mentioned, and even a smaller proportion of the cases coming under my personal care than would be the case but for the view that one of the important functions of such an institution is teaching, and the consequent custom of placing as large a proportion as possible of the operative cases in my terms of service in the hands of the junior surgeons under my supervision, these cases would not, of course, be includable as investigatory material.

The objections thus far presented to the use of the blood-clot in the mastoid as facilitating or affecting repair have come from various sources, on the part of both general and aural surgeons—doubt as to the results obtained, but doubt is a broad pathway to belief ; question as to the real shortening of the after-treatment, a question to be fundamentally answered only by practical experience and comparative observation ; and, finally, the least tenable of all, the expression of fear of the possible consequences of closing the mastoid wound.

When this closure is effected by the simple coaptation of the surfaces of the cut in the soft tissues, under lateral pressure from gauze rolls, by the interrupted suture, which can at any time be divided, or by the subcutaneous, continued suture, which can be immediately withdrawn, and while the superficial appearance of the operated region and the systemic symptoms are facile indicators

of the condition within, this objection would seem to fail of effect. Whatever the manner of the closure of the mastoid wound may be, the lower portion should be left free for serous outflow, and this outflow should be assured at subsequent dressings.

Several years ago, at a meeting of this Association in Leeds, Sir William Macewen made the statement that the American aural surgeons were afraid of the lateral sinus. Thanks to his brilliant and incisive teaching, that fear has long since passed away, as the records of sinus operations in aural hospital reports and in the *Transactions* of the American Otological Society abundantly testify; it required practical acquaintanceship with the subject to banish fear. To-day there would seem to be reason to repeat the statement, in an altered form, and to say that some of the American aural surgeons seem to be afraid of the blood-clot; it is only by practical personal experience that they can determine its value as a part of a repair process.

Were the percentage of healing by first intention in acute cases alone less than it has been proven to be by those who have fairly tried it, the result, in the mitigation of pain and discomfort, and in shortening the duration of after-treatment, would be well worth striving for, especially as success presupposes an advance in the surgical thoroughness of the operation itself and the application of a judicious consideration of conditions, which is as much a part of the real domain of surgery as is the application of structural knowledge or of manipulative skill.

The history of the mastoid operations from the time when a simple Wilde's incision was the limit of surgical interference shows a progressive development in the extent to which the mastoid cavity is laid bare and the completeness with which its contents are evacuated; but the history of the reparative process will not be complete without careful estimate and due consideration of the subject of this paper.

The modern mastoid operation is the outcome of a speedy mechanical substitute for the slower evacuation of the morbid mastoid contents by a natural process of elimination; this more modern after-treatment is the attempt at employment of a natural process by the utilisation of the most effective primary repair material which Nature affords.

The success thus far attained adequately justifies still further investigation, both as to the class of cases in which it is most applicable and the proper systemic preparation of the patient, while its entire safety and increased advantage when understand-

ingly used, with the proper surgical preliminaries, has been sufficiently demonstrated to warrant its taking its place as a rational surgical procedure.

CONCLUSIONS.

From the observations thus far made and still in progress it would seem that the following conclusions may be justifiably drawn.

(1) Of the larger bone-cavities susceptible to pyogenic invasion, both through the medium of the circulation and aerially, the mastoid cavity is the most readily accessible to surgical interference for the removal of its diseased contents.

(2) That the thorough removal of diseased tissue, to the inclusion of inflamed or necrosed portions of the inner mastoid cortex itself, down to the surrounding healthy soft tissue, supplemented by personal care in the after-dressings, is requisite to the best results obtainable in the reparative process, of which the surgical interference is the inceptor.

(3) That the mastoid cavity thus thoroughly cleansed, and safeguarded from without is subject to reinfection mainly through one channel, that leading from the middle ear, which cavity should itself be thoroughly cleansed and independently drained through the external auditory canal.

(4) That the blood-clot is not an inert filling material merely, but has in its serum a protective defence, viable for at least forty-eight hours after the formation of the clot, and in its clot a repair material capable of producing dense fibrous bands traversing the unified mastoid space.

(5) That the use of the blood-clot, completely filling a carefully exenterated mastoid cavity, results, when it persists in healing by first intention, in a varying percentage of cases.

(6) That the persistence of the blood-clot during the period of its protective viability only, even though it then breaks down and comes away entirely, results in the formation of foundation granulation, which are a basis for subsequent repair, with speedier and more satisfactory results in healing than are obtainable when the wound is dry packed from the beginning.

(7) That the safety of this procedure is assured by the limitation of the protective viability of the clot itself, that it breaks down under a volume of pyogenic material which it is in itself insufficient to conquer, and provides exit along the line of least resistance through the surgically-created channel.

(8) That the only cases to which the blood-clot dressing are inapplicable are those in which, on account of pyogenic invasion of surrounding structures, it is desirable to keep the mastoid cavity open as a path of access, and those in which the systemic condition of the patient, or the extent of the local infection, do not warrant the expectation of speedy repair.

And, finally, it may be said that the betterment in the repair of the mastoid wound here cited is not the result of any special skill or new discovery, but is the outcome of the careful consideration and application of already accepted general surgical rules.

REFERENCE.

¹ M. Schede, "Ueber die Heilung von Wunden unter den feuchten Blutschorf, *Verhandlungen der Deutsche Gesellschaft für Chirurgie*, 1886.

DISCUSSION.

Dr. GEORGE A. LELAND (Boston, Massachusetts) said he well remembered the first case he tried after this blood-clot dressing had been suggested to him by the reader of the paper. The clot broke down in a few days, and it took many days to remove its decomposing and very odorous remains from the wound by peroxide of hydrogen and corrosive sublimate irrigation. After this very unsatisfactory experience he discarded the method for several years, but hearing more about it, and thinking that perhaps success was, as suggested by Dr. Blake, the criterion of a clean surgeon, it was again taken up four or five years ago, and had been used in selected cases more or less since. Some of the cases had broken down, and indeed infection would always be possible through the Eustachian tube and middle ear until some method was learned by which the tympanic attic could be shut off from the excavated mastoid. His cases had all been acute ones, or chronic ones in which it had been possible to leave only a very clean bony shell even if a clean dura were occasionally exposed. He had been able to find clear notes of only eighteen cases, of which eight were successful, all healing within five to seven days by first intention, and leaving almost no scar or depression, the middle ear having dried up, and the tympanic membrane being intact, and the hearing nearly or quite normal. Of those which broke down several did so within three to six days—one in a case of measles—the centre of the clot dissolving away, but leaving much of the mass in contact with the bone, which undoubtedly hastened healing by providing nourishment for the new granulations. One produced severe local cellulitis with marked febrile disturbance, which, however, rapidly subsided after partial reopening of the wound and hot corrosive irrigations. Another broke down after thirty days, but healed rapidly under the care of another surgeon. These cases had been alluded to elsewhere. Doubtless this was a good procedure in selected cases, but in his opinion it should not be used in the infectious exanthemata, in cases of cholesteatoma, and when the patient was too ill to have good resistance or reparative power. He had not dared to try it in cases of tympano-mastoid exenteration, preferring to carefully graft so as to have a better chance of preserving the hearing as much as possible.

Dr. W. SOHIER BRYANT had used Dr. Blake's physiological method of wound repair in all his operations on the mastoid, with two exceptions, during the past three years. These were cases in which it was not advisable to remove all the necrotic tissue. The results in the whole series of cases had been more than gratifying, both as to the rapidity of convalescence and the large amount of residual hearing.

The PRESIDENT congratulated the Section on the valuable paper given by Dr. Clarence Blake, whom he welcomed as their *doyen*. He asked Dr. Blake whether he applied the blood-clot method to the radical operation, and, if so, whether it prevented stenoses.

NASAL SARCOMA.

Dr. J. PRICE-BROWN (Toronto) showed a case of nasal sarcoma, with pathological specimens removed three years ago. He said: The patient is a man aged twenty-five whose history has already been reported in the journals. He has been quite well for a long time, and although there was a slight recurrence for a while in one spot—at the junction of the left posterior naris with the post-pharynx, successive electro-cautery burnings of the little affected area had finally removed the disease. It is several months now since the last cauterisation, and there is no appearance of the return of the disease. For the last two years the patient has followed uninterruptedly his regular occupation of electrician.

CIRCULATION IN THE LABYRINTH OF THE EAR.

Dr. GEORGE E. SHAMBAUGH (Chicago) exhibited preparations showing the circulation in the labyrinth of the ear. These preparations were celluloid in casts that had been made of the cavities of the labyrinth from material in which the blood-vessels had been previously injected. The casts had been cleaned in creosote, and then mounted in Canada balsam in glass cells. The specimens exhibited were complete casts of the whole labyrinth, and all of the vessels could be readily traced from the point where the labyrinthine artery entered the labyrinth until the veins united and left the labyrinth along the canaliculus cochleæ.

THE USE OF THE COLD WIRE SNARE IN THE REMOVAL OF HYPERTROPHIED TONSILS.

BY ALICE G. BRYANT, A.B., M.D.,

Boston, Mass.

Otologist and Laryngologist, New England Hospital for Women and Children ;
Otologist and Laryngologist, Pope Dispensary.

ONE would suppose that the final word had been written upon this subject if one takes note of the numerous articles that have appeared from time to time upon the technique and armamentaria employed in the removal of hypertrophied tonsils. That serious difficulties have appeared is beyond question ; and the inadequacy of many of the older and present-day methods of operating only emphasises the point that there is abundant scope for further advance along these lines. We shall presently consider a course of operative procedure most generally satisfactory to the writer. As regards the preparation of the patient prior to operation, where personal control of the patient is had, a careful preliminary examination should be made. If necessary the patient is put under tonic treatment for some weeks before an operation is performed. An acute or subacute inflammatory condition of the ear, nose, throat, and chest should be allowed to subside before any operative measures are undertaken. The teeth should be inspected by the dentist, all offensive cavities attended to, and the teeth cleaned. An appropriate nose, throat, and mouth wash is ordered to be used ten days to two weeks before the appointed date. A cathartic is prescribed not later than two days before the day of operation. No food is given for many hours before the anæsthetic is administered. Ether is used as the anæsthetic, and it is given while the patient is lying down. It is administered until the manipulation in the throat ceases approximately to bring into action the faucial muscles, thus avoiding pain, retching, and loss of time. The writer has resorted to various measures in the past for the removal of the tonsils, but they may be passed by for the present without comment. The method to be referred to in using the cold wire snare for the complete extirpation of hypertrophied tonsils has proved most satisfactory in the writer's hands. The instruments used for this purpose are as follows : (1) the central mouth gag of Jansen, (2) a Bryant tongue depressor, (3) a Bryant tonsil tenaculum, (4) a Farlow tonsil snare, with Bryant's modified cannula for carrying the wire, (5) oxidised steel piano wire

No. 12 or 13, (6) a wire cutter, (7) sponge-holder (8) aseptic gauze sponges.

Let us refer to the Farlow tonsil snare. As regards the cannula for carrying the wire one of special size and form has been made for the writer. The socket for carrying the circular cannula has been reamed so as to hold a tube of a larger diameter than the one ordinarily used. For instance, the cannula will easily carry a double-threaded No. 12 or 13 oxidised steel piano wire. These numbers have proved most useful in my hands, combining strength with resistance. By allowing the wire to become oxidised a more adherent and steadier hold is had upon the tissues, and we shall soon see that it takes the place of the knife or bistoury in severing adhesions round about the tonsils. Further, the distal end of the cannula has been reinforced so as to withstand the wear and tear of the heavy and coarse wire. Moreover, the exit at this point broadens out into a flattened, truncated, triangular-shaped tip. By this arrangement the wire is drawn more easily through the tube, and it is further favoured by the distal end of the cannula being curved in the quadrant of a circle. The cannula is now threaded with the wire—that is, drawn into an oval-shaped loop—and, by close inspection, it is made to carefully conform to the size of the hypertrophied tonsil. We must remember that a heavy wire is being used, and too slack a loop would not closely embrace the tonsil. As a result it might necessitate an awkward and unnecessary re-winding of the wire. The loop of wire continues the quadrant of the circle made by the curved end of the cannula.

To facilitate winding the wire over the crossbars of the snare the free ends of the wire are held between the jaws of the wire cutter, and they are twisted firmly and quickly. The wire glides easily through the cannula, and only a moderate traction is exerted upon the wire.

One can readily see that the loop of wire at no moment is bent over the end of the tube, nor has a marked kink been given to it, for the purpose of guiding and moulding the wire, as so often happens when a smaller sized and more elastic and flexible wire is passed through a straight tube. By this latter method the wire is pulled in on the oblique, and may break. It pulls in with some difficulty, and harmful forced traction might be used on the tonsil. Because the wire lacks strength and resistance and is flexible, the loop will not always hold when thus placed, and it can be of little use in severing adhesions round about the tonsil.

Starting with the Jansen central mouth gag in place, the tongue

is drawn forward and depressed with the tongue depressor in the operator's left hand.

The advantages of this special tongue depressor have been set forth by the writer in a paper published in the *Laryngoscope* for February, 1905.

The tonsil tenaculum is now passed through the wire loop of the tonsil snare, and both instruments are held in the operator's right hand. The above tenaculum was fully described by the writer in the December, 1905, issue of the *Laryngoscope*.

It may be well to quote freely from that article, as the tonsil tenaculum was designed to be used in conjunction with the Farlow tonsil snare. We shall see that the loop rides the tenaculum, which from the special shape of its diverging handles cannot slip away from the operator; nor can the loop of wire or cannula slip in between the hinge or the widely separated shorter arms at an inopportune moment; no more can the uvula be squeezed between those arms or caught in the hinge that is placed beyond its range. The tonsil is held by three prongs, two of which seize it at the base, and the third comes in between the two at the apex, giving a secure hold, especially helpful in friable tonsils. The tenaculum is worked by a strong wheel-bearing spring. The horizontal convex curve of the shorter arms and the shape and size of handles leave the line of vision and field of operation unobstructed—desirable in those operations requiring the use of the snare. The upper handle is shorter than the lower straight handle, and terminates at an open curved projection upon which the thumb rests, assisting in guiding the instrument. The slightest pressure upon the handle adjusts or releases the tenaculum. In this instrument it is to be noted that the lock and thumb and finger rings are dispensed with, thus economising time.

To continue our description of operative procedure: an assistant presses in with moderate force on the tonsil at the external angle of the jaw, while the operator seizes the tonsil by the widely-separated prongs of the tenaculum. This description will apply equally well to the right or left tonsil. As we change the tonsil tenaculum from the right to the left side of the patient or *vice versa*, either one or two prongs will be uppermost, as the case may be.

Care must be taken that the upper prong is hooked into the tonsil at its supratonsillar region and downward traction is made, while the lower prongs gather up within the grasp of the tenaculum as much tonsillar tissue as possible. By this means the tonsil is

compressed from above downwards—or, in other words, its superior inferior diameter is lessened. Thus a secure hold is had upon the tonsil, and we shall see later that the wire loop of the snare is made to surround the whole tonsil. As we shorten its superior inferior diameter a small loop of wire can be used in the tonsil snare, and the field of operation is more open to inspection, thus facilitating all steps in adjusting the wire.

At this juncture the tongue depressor is removed, and the left hand now holds the tonsil tenaculum by its long arm and draws the tonsil strongly inwards and forwards out of its socket, while the right hand holds the tonsil snare. The strong, resistant, concavely-curved loop of oxidised steel piano wire of the tonsil snare is firmly pushed between the tonsil and posterior pillar almost to its base. The next step is where the tonsil tenaculum, still grasping the tonsil, pulls it forcibly inwards and backwards out of its recess. The distal end of the wire loop is thus held in place, while the proximal end of the loop and its cannula are pressed firmly in between the anterior pillar and the tonsil. This step is the most difficult of all, for a large portion of the tonsil is concealed beneath the anterior pillar. Meanwhile a careful traction is made on the wire loop to hold it in place. Great care must be observed that the loop of wire rides free of the tenaculum, or that it is well to its outer side, or there would be danger that the prongs of the tenaculum might be grasped in the loop. Having observed these precautions, the operator, with a firm but steady hand on the snare, draws the loop quickly home and tightens it around the base of the tonsil. No marked traction should be made on the tonsil; the loop of the snare should at all times bring very nearly an even pressure on the tonsil. At this point the assistant releases the pressure at the angle of the jaw. The snare is then locked, and, for final adjustment, the screw at the proximal end is slowly turned, and thus the tonsil is severed by a process of dissection and cutting, and still held within the grasp of the tenaculum.

The patient heretofore has been maintained in a sitting position from the time anæsthesia was complete, but when this last step is taken the nurse quickly but gently bends the patient forwards, with the trunk lightly flexed on the thighs and the chin lightly flexed on the chest. By this manœuvre the pharynx is placed on a lower plane than the larynx. Any hæmorrhage that might occur, or any tonsillar exudate, is thus prevented from finding its way to the larynx.

As to the post-operative treatment, the patient is fed on semi-

solid food and kept in bed for two days, until the general and local condition warrants a return to the ordinary vocations of life. No throat or nose sprays are prescribed.

In every case all adhesions that have existed between the tonsil and pillar have never failed to have been broken up simply and speedily by this method, without aid of the knife.

The oxidised wire severs the tonsil easily from its pillars and base. The tonsil, including the supra-tonsillar tissue, is removed entire. It is covered by its capsule, except at its base, where it was closely adherent to the underlying tissue. In the majority of cases there is only slight hæmorrhage, pain, or retching. If the operation has been thoroughly done, the inflammatory reaction will be slight as compared with the reaction following the use of the knife, or the punch or guillotine or cautery.

To facilitate operating, it would be well to have in one's possession two Farlow tonsil snares with wire adjusted: or, if expense were a question in point, a second cannula could be at hand, threaded with wire to replace the one already used.

The time consumed during this process of tonsillectomy varies according to the adhesions and configuration of the tonsil met with in each individual case. Where the adhesions are many and firm the milled wheel of the snare should be slowly turned. For instance, a pedunculated hypertrophied tonsil, or a "small but diseased tonsil" has been severed in two minutes; whereas, with a sessile hypertrophied tonsil, or "a submerged tonsil," or a tonsil bound down by adhesions, the process may be prolonged to six or eight minutes.

In children with marked hypertrophied tonsils the tenaculum may be dispensed with and the tonsil expressed by the wire loop of the snare, the tonsil readily passing through the loop, as a button slips through a button-hole.

The advantages of this mode of procedure may be summarised as follows:

- (1) The time required for operating is at a minimum.
- (2) The operating is done effectively with the least possible injury to patient.
- (3) There is in the majority of cases slight amount of hæmorrhage, pain, and retching.
- (4) Asepsis is carefully observed.
- (5) The growth is firmly grasped by the tonsil tenaculum and is in no danger of being aspirated or swallowed.
- (6) The wire loop is never broken.

(7) Only moderate traction is used on the tonsil in closing in on the wire.

(8) Neither knife, nor scissors, nor cautery is required for separating pillars from tonsil.

(9) The procedure is attended by slight reaction, as compared with the reaction following the use of the knife, punch, guillotine, or cautery.

(10) The tonsil is completely removed and recurrence of tonsillar tissue is thereby prevented.

I realise that the personal factor enters largely into every operative procedure. However, I am a warm advocate of this method of using the snare; for many years of operating, both in private and hospital practice, by this described procedure has convinced me that tonsillectomy is less difficult than it once seemed to be, and that surgically it is the ideal method.

These instruments are made by Codman and Shurtleff of Boston, to whom we desire to express our thanks for their assistance in preparing the authors' special instruments.

DISCUSSION.

DR. CHEVALIER JACKSON (Pittsburg, Pennsylvania) wished to support the advocacy of the cold wire snare. It had the advantage of enucleating the tonsil, as the wire, if started properly, would find the point of least resistance between the tonsil and its bed. It was often necessary, however, to supplement the snare with punch forceps. His personal preference was for Peter's tonsil snare, the fenestrum of which allowed the use of a fine wire and was as rapid as the guillotine. Six times he had tied the external carotid artery for post-operative tonsillar hæmorrhage (not all after his own operations), but only in one of these cases had the snare been used, and that in a hæmophilic: in another malignant disease of the tonsil had been present. He did not think ligation was necessary in all these cases, but it was easier for the patient than the use of the tonsillar-compressing hæmostat of Stoerk or to wait until the patient had become exsanguinated. He considered Dr. Bryant's forceps exceedingly ingenious.

DR. W. E. CASSELBERRY (Chicago) said the methods of tonsillectomy should be considered in regard to adults and in regard to children with and without general anæsthesia. Owing to the pain caused, he had used the snare method in children only under general anæsthesia, and that mostly some years ago. He had now returned to his simplified tonsillotome, which he used not too sharp, and assisted by grasping forceps. He aimed at enucleating the tonsils as with a snare. The snare had so often to be supplemented by cutting instruments in cases of adherent flat tonsils that it was more convenient in children to use cutting instruments for the whole operation. Adults were much more liable to bleed dangerously, and in a person of average fortitude the cold snare could be well and more safely used if the cocaine anæsthesia were as complete as possible. It was usually necessary to prepare a groove for the wire above and below

the tonsil by preliminary incisions. He used a much thinner wire (No. 6 to No. 8) than had been recommended, as a thick one would be very painful.

Dr. GEORGE A. LELAND (Boston) said that as time was an important item, it having been his custom to remove the tonsils and adenoids together under primary ether anæsthesia, he had long ago given up the snare, and used the guillotine after having freed with right-angled probe-pointed knives the pillars from the tonsil when adhesions were present. In a fairly large number of operations during the last twenty years he had had but one case of alarming hæmorrhage; it was that of a boy aged about twenty years, large, well-fed, a mouth-breather, and with tonsils and adenoids of enormous size. With the head over the table both tonsils were quickly snipped off with the guillotine. The flow of blood afterwards was very profuse. As it was known that bleeding did not occur from a rough surface, whereas the knife had left a smooth one, by means of his finger-nail previously bevelled on the inside, and carefully sterilised, he scratched both cut surfaces very vigorously and the bleeding instantly ceased. Four days later the adenoids were removed without more than ordinary bleeding. Since the Gottstein curette had come into use, it had been his invariable custom to thus rough up the cut surfaces, and the procedure had contributed vastly to his equanimity and comfort after operations on doubtful cases.

Dr. WATSON WILLIAMS (Bristol) remarked that the occasional but grave occurrence of severe and dangerous hæmorrhage following operation for a relatively simple condition brought home the importance of employing such means as had been referred to for the removal of the chronic enlarged tonsils of adults which had undergone fibroid degeneration. In such cases when operative interference was called for the snare was preferable to a guillotine, but as in tonsils of that kind the infective processes were largely in abeyance, it would suffice and be safer to make a less complete extirpation than in younger patients.

Dr. JOHN HUNTER (Toronto) asked as to the members' experience of the removal of both tonsils at one sitting on account of possible severe hæmorrhage, either at once or within one or two days. He thought the preference in Toronto was rather to wait some time before removing the second tonsil.

Dr. C. TROW (Toronto) controverted Dr. Hunter's statement that it was the custom there to take out one tonsil and wait some days before removing the other. He (Dr. Trow) had never seen a dangerous hæmorrhage from tonsillotomy, either in his own practice or during a long term of service at Golden Square Hospital, London.

Dr. HERBERT TILLEY (London) had had experience of three cases of severe tonsillar hæmorrhage during twelve years of practice. The first case was in an anæmic female, aged thirty-three, whose left tonsil was removed for constantly recurring attacks of tonsillitis. She bled until she fainted in spite of all efforts to check the bleeding. The third case was in a lad upon whom enucleation of the right tonsil was being practised. The speaker always removed both tonsils at the same sitting, and since the cases of hæmorrhage nearly always occurred in adults, he was accustomed to have ready a sponge soaked in a saturated solution of a mixture of tannic and gallic acids. If hæmorrhage persisted the sponge should be held against the bleeding surface, and would rarely prove ineffective. He thought that the use of the snare tended to produce severe pain in the throat owing to the crushing of the tissues.

Dr. STCLAIR THOMSON (London) referred to the general use of the guillotine in England, the employment of chloroform instead of ether, and to the much greater infrequency of serious hæmorrhage than appeared to be the case in America. Possibly another reason was that in London there was much less operative work done in the office. He had never met a case requiring ligation of the external carotid, and in thirteen years had only had two cases in private practice that caused any anxiety.

Dr. HENRY SMURTHWAITE (Newcastle-on-Tyne) desired to draw attention to three points, namely, the condition and idiosyncrasy of the patient, the operation, and the anæsthesia. Was it not a fact that hæmophilia or leukæmia accounted for a large number of the severe and fatal cases of hæmorrhage following tonsillotomy? He always made a point of proving or disproving a tendency to be a "bleeder" in his patient before operating, and had refused to remove the tonsils in a young man who gave a history of severe bleeding following tooth extraction and also epistaxis for several days after a blow. Profuse hæmorrhage might be due to severing the anterior pillar, and so cutting the more or less large vessel running in it. As to the anæsthetic, he had found there was always more bleeding with the use of ether, and personally, when he did use general anæsthesia, he preferred ethyl chloride or chloroform.

Dr. JOHN A. DOXOVAN referred to the case of an adult whose tonsils, after the breaking down of adhesions, were removed with the snare. Very severe hæmorrhage supervened, and was checked after four hours by the constant application of suprarenalin solution. He always introduced a probe into the crypts of removed tonsils. If it passed through the tonsils some tonsillar tissue remained in the throat, but if it did not go through the patient could be positively assured of no more tonsil trouble.

The PRESIDENT avoided the guillotine in adults, and employed the strong wire snare, or more frequently, the morcelleur devised by Ruault.

REPLY.

Dr. ALICE G. BRYANT, in reply, said that the twisting of the wire as it entered the cannula referred to by one speaker might be obviated by using heavy wire. She had tried finer wire, No. 5 or 7, but had gradually come to adopt No. 12 or 13. The oxidation of the wire favoured its closer adherence to the tissues.

INFLAMMATORY NASAL OBSTRUCTION AS AN ETIOLOGIC FACTOR IN THE PRODUCTION OF SPUTA.

By W. PEYRE PORCHER, M.D.,
Charleston, S.C.

I HAVE selected this subject for your consideration chiefly because of my conviction—

(1) That the word "sputa" is a misnomer in that it defines all

expectoration to be a product of the lower respiratory organs alone and saliva.

(2) That inflammatory nasal obstruction is a much more frequent source of profuse expectoration than is commonly accorded it.

(3) That the symptoms of chronic bronchitis are so varied and uncertain that the diagnosis is often based alone upon the prolonged expectoration.

If we could account for this expectoration in no other way—that is, if the upper respiratory passages are unobstructed and the amount of nasal secretion not above normal—such a diagnosis would be justifiable; but if together with nasal obstruction there be history of prolonged and excessive expectoration, with considerable tickling and irritation in the throat and inflammatory conditions in the ear and other adjacent organs, aural polypi, etc., we must of necessity conclude that the nasal obstruction was a prime factor in the production of such a chain of symptoms.

In a careful research into the literature of the subject, I have been unable to find a single instance where inflammatory nasal obstruction has been noted among the etiologic factors of laryngeal expectoration.

On June 14, 1890, I published an article on “The Origin of Sputa in Subacute Cough.” (See *New York Medical Journal*.) In this article I endeavoured to prove that profuse expectoration, resulting from most cases of subacute cough, originated in the nose and naso-pharynx, and not in the lungs or bronchi. A number of cases were reported at that time in substantiation of these facts. It is maintained by some authorities that nasopharyngeal secretions do not pass down into the laryngeal box but accumulate around the pyriform sinuses, or trickle down into the gullet, or are swallowed. It will be my endeavour in this paper to show that as a result of pathological conditions in the nose and without any signs of bronchitis or pneumonia present, nasopharyngeal secretions do pass down into the larynx, that they accumulate in the ventricles, and are expelled by contraction of the muscles of vocalisation or by coughing, just as irritating substances, secretions, etc., are expelled from the nose by sneezing.¹

It is my belief that the following conclusions are true: First, that as a result of inflammatory obstructions in the nose, posterior nasal secretions do pass down into the sacculi laryngis, and are expectorated by the contraction of the muscles of vocalisation.

¹ Dr. Porcher related an illustrative case in the language of the patient herself.

Secondly, that nasal obstructions are often overlooked among the etiologic factors in the production of profuse expectoration, diseases of the middle ear, aural polypi, facial neuralgia, refractive errors, and other pathological conditions in the eye, as well as many reflex neuroses and other diseases of the adjacent organs.

DISCUSSION.

The PRESIDENT thought Dr. Porcher's views would receive general acceptance.

HEADACHE: PATHOLOGICAL CONDITIONS OF THE MIDDLE TURBINAL A CAUSAL FACTOR.

BY HENRY SMURTHWAITE, M.D.,
Newcastle-on-Tyne.

ALTHOUGH one of the minor troubles, we are all prone to, at some period or other, headache—maybe at times so severe, or so constantly recurring, as to mar one's pleasure in existence. In all probability the greatest percentage of cases have their origin in stomachic and intestinal troubles, while dental caries is also a fruitful source. Apart from these causes and the rarer forms due to kidney and cerebral or cerebellar disease, there are a number of cases of genuine nasal origin. It is not my intention in this short paper to enter into the various forms of nasal disease producing headaches, such as affections of the sinuses, etc., but merely to draw attention to one definite locality in the nasal chambers, and, by citing a few cases I have had under my care, to open up the subject for discussion. Apart from sinus mischief—that is, when there is not the slightest evidence of such a condition—we often find the anterior end of the middle turbinal hypertrophied, or, if not hypertrophied, in a state of turgescence. It is only of recent years we have turned our attention to the treatment of the middle turbinal, in most cases the inferior coming in for the greatest share; here, of course, I refer to hypertrophic conditions only.

In examining a large number of nasal cavities *post mortem*, one sees that the turbinal bones, even in a healthy condition, vary in size and contour, just as other structures in this and other regions of the body. Looking at the middle turbinal in one specimen, we find the bone hanging perpendicularly, allowing very little space

between it and the bulla ethmoidalis and ethmoidal cells, whilst there is ample room between it and the septum, so much so that in a spacious nasal chamber we can readily see the sphenoidal ostium. Yet in another specimen the bone either hangs obliquely towards the septum or is crescentic in shape, its inner wall and the septum being thus almost in apposition.

Now, supposing a patient has a middle turbinal of the first cited conformity, and hypertrophy or turgescence takes place: such hypertrophy or turgescence would have to be very excessive before there would be much pressure excited on the septum. On the other hand, a hypertrophy supervening in an obliquely situated or crescentic turbinal of the second variety would not require to be great to produce direct contact between septum and turbinal, and should the hypertrophy be excessive the pressure on both turbinal and septum would be very real.

Headache, which may vary from a feeling of slight oppression across the forehead to an acute throbbing pain, can have its origin in the nose, and can, as I will by a few examples demonstrate, be cured by nasal treatment. We have all, I am sure, seen cases in which the anterior end of the middle turbinal is so tightly wedged against the septum as not to allow the passage of a fine probe between. It is in this class of case we meet with the headache symptoms, and in which such symptoms disappear after removing the cause, that is the anterior end of the middle turbinal, so relieving the pressure.

In referring to my casebook and gleaning therefrom the symptoms described by patients coming under this class, I find the following are complained of: a tightness across the bridge of the nose as though the nose were being compressed in this position; a feeling of pressure above the eyes in the region of the frontal sinns; pain radiating from the inner canthus and side of the nose down the side of the face to the infra-orbital canal or upwards and outwards to the supra-orbital canal; in a circle round the eyes, with lachrymation; finally pain starting from the root of the nose and inner angle of the orbit, and passing up over the forehead and scalp to the occiput. Now, we can look upon these foregoing symptoms as being directly due to pressure on the nerves supplying the mucous membrane in the region of the middle turbinal and septum, and by a study of the fifth nerve we shall readily explain most of them.

Let us take first the superior maxillary, or second division of the fifth nerve. Springing from the Gasserian ganglion, it leaves

the cranium and lies at the upper part of the pterygoid fossa, and, passing on, terminates on the face as the infra-orbital, just below the orbital cavity. In its course it gives off two or more small branches to Meckel's ganglion, which lies in the pterygoid fossa some few millimetres below it. Other branches are an orbital which anastomoses with the lachrymal from the ophthalmic or first division of the fifth, a dental, and its terminal, which leaves the infra-orbital canal as the nerve of that name, supplying the skin of the lower lid and side of the face in the region of the nose.

It is from Meckel's ganglion we get the nerve-supply of the middle turbinal through the sphenopalatine, which, breaking up into internal and external branches, supplies by its external the septal or outer surface, whilst the inner surface, as well as the ethmoid and sphenoid, derive their supply from the internal.

The first division of the fifth gives off three branches—nasal, frontal, and lachrymal. The lachrymal supplies the gland of that name, while the frontal, through its external or supra-orbital branch, sends twigs to the forehead, upper lid, and side of the face. The nasal divides into an internal and an external. The external, running along the inferior border of the superior oblique muscle of the eye, finally divides into small branches supplying the lachrymal gland, inner part of the upper lid, and skin between the eyes. The internal branch runs obliquely inwards, lying on the cribriform plate or the ethmoid beneath the olfactory bulb, where it gives off some twigs to the dura mater. It then passes into the nasal fossa and breaks up into internal and external branches. The internal supplies the mucous membrane of the inner wall, whilst the external, running outwards, gives some small twigs to the anterior part of the external wall, and supplies the under surface of the nasal bone, leaves the nasal cavity between the latter bone and cartilage, which it also supplies, finally breaking up into small ramifications in the skin on the nose.

Considering these anatomical conditions, both osteological and nervous, in the nose, it follows that by transference of pain along the many branches of the first two divisions of the fifth nerve, pressure exerted on the middle turbinal or septum would, by this transference, give rise to pain in other regions supplied by these nerves. This is exactly what we find clinically to be the case. In illustration of this fact the history of one or two cases will suffice.

CASE 1.—A. G——, male, aged thirty-four, has been troubled with stuffiness in right nostril for one and a half years, with periodic attacks of headache during this time. Three months ago he contracted influenza, and was confined to his bed

for over a week with same. At this time his right eye troubled him with constant lachrymation, together with infra-orbital and supra-orbital pain, and added to this he had loss of smell on the same side. With the exception of the lachrymation these symptoms persisted for three months, up to the time of his first visit to me on April 22 of this year. When I first saw him he had marked tenderness on pressure over the infra-orbital and supra-orbital canals, and also over the side of the face and nose, extending to the inner canthus. His subjective symptoms were exacerbations of acute frontal headache with a constant numbness in the skin in a complete circle round the eye. On examining the interior of the nose I found the inferior turbinal somewhat turgescient, but a solution of a 5 per cent. cocaine caused contraction, allowing a good view of the middle turbinal region. Here the turbinal was very much enlarged, granular, acutely inflamed, secreting a glairy mucus, and was wedged tightly up against the septum. Under cocaine and adrenalin I removed the anterior end of the turbinal with curved scissors and snare. Two days later he returned to have the gauze plug removed which had been inserted after the operation. He expressed himself as having entirely lost the pain, though there was still some feeling of numbness in the infra-orbital and supra-orbital regions. This latter soon disappeared, and now, three weeks later, with the exception of the loss of smell, which has been almost completely regained, his head symptoms have disappeared. At no time was there evidence of sinus mischief.

CASE 2.—F. H.—, male, aged fifty-three, complained of tightness over bridge of nose, numbness on face below both eyes, pain starting at the root of the nose and running up over the forehead and scalp to the occiput. This latter at times was very acute; duration two years. Nasal examination showed polypi springing from middle turbinal region in the right nostril, a hypertrophied middle turbinal in contact with the septum in the left. The polypi were removed with a portion of the middle turbinal from the right nostril and the anterior end of the middle turbinal from the left, with the result that the headache and numbness entirely disappeared.

CASE 3.—H. T.—, female, aged twenty-four, inability to breathe through left nostril, frontal and infra-orbital pain (left), at times excessive lachrymation in the left eye; duration four years. Had tried various remedies for headache without avail. Had influenza four years previously; trouble dating from this time. Again in this case the middle turbinal was much hypertrophied, cocaine making no reduction in its size, and tightly pressing on the septum, so that a fine probe could not be passed between without force. The anterior end of the turbinal was removed in the same manner as in the other cases and with a like result—disappearance of symptoms.

These three cases are quite sufficient to show that direct pressure on branches of the fifth nerve can, and does, take place in the nasal chambers, with symptoms of referred pain to more remote regions supplied by other branches of the trigeminal nerve.

While we are thus able, by our knowledge of the distribution of the fifth nerve, to trace the reflex symptoms of infra-orbital and supra-orbital pain and numbness, as well as lachrymation, and this latter quite apart from epiphora, I myself cannot explain the con-

nection between the nose and occipital pain mentioned in Case 2. That there is a connection I have in two or three cases been able to verify in treatment of the middle turbinal. One case, especially, I recall of frontal sinus disease. In removing polypi and breaking down the ethmoidal cells with Grünwald's forceps, the patient has complained of a sudden acute pain slightly to the outer side of the occiput, on the same side as the operated nostril.

DISCUSSION.

The PRESIDENT supported Dr. Smurthwaite's views, but advised caution in prognosis. There were often other causes of headache as well as the enlarged turbinal. This need not prevent the removal of the enlarged portion, which often effected a permanent cure, but the result could not always be guaranteed.

SUPPLEMENTARY REPORT ON CASE OF ABDUCTOR PARALYSIS REPORTED BY DR. GEO. L. RICHARDS, OF FALL RIVER, BEFORE THE SECTION OF LARYNGOLOGY, BRITISH MEDICAL ASSOCIATION, TORONTO MEETING.

On September 1 the experiment was made of taking the tube out of the child's throat for an hour each day, and compelling laryngeal respiration. There was considerable struggling and quite a degree of dyspnœa at first, but this was gradually overcome until after a few days the period was lengthened, and by the middle of September the tube could be left out for the entire day. It was put in every night. The voice began to improve, the child cried naturally, the dyspnœa disappeared, and early in October the tube was left out altogether and the tracheotomy wound was sewn up. She was retained in the hospital a week afterwards, but there being no apparent trouble, the child was discharged on October 15, having worn a tracheotomy tube continuously nearly four months. The child has been under observation since, but there has been no further trouble. It is probable that this case was one of purely nervous origin, due to the two frights, and recovery is presumptively permanent.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE LARYNGOLOGICAL
SOCIETY OF LONDON.*One Hundred-and-eighth Ordinary Meeting, November 2, 1906.*J. B. BALL, M.D., *President, in the Chair.*HENRY J. DAVIS, M.B. }
W. JOBSON HORNE, M.D. } Hon. Secretaries.

Present—40 members and 5 visitors.

The minutes of the previous meeting were read and confirmed.

The following communications were made :

TUMOUR OF THE PHARYNX.

Shown by Dr. J. B. BALL. He said : The patient, a woman, aged fifty-three, first noticed a swelling in the left side of the throat, about five years ago. Previous to this she says that some gritty matter came from the left tonsil on several occasions. The swelling increased very slowly at first, but during the last twelve months it had increased more rapidly. On the left side of the throat is a tumour, about the size of a tangerine orange, pushing forwards the soft palate, which is tightly stretched over it. The tumour is of solid consistence, slightly elastic on pressure. On the external surface, just behind the ramus of the lower jaw, there is a distinct hard swelling, apparently continuous with the tumour inside. She has no pain, and only a little difficulty in swallowing food, and slight difficulty with her breathing occasionally at night.

Mr. BUTLIN said that he had only been able to make a short examination of the patient, but that he felt sure there was a tumour deep down behind the angle of the jaw. There could be little doubt that the tumour was continuous with the tumour of the palate, both on account of its hardness and its absolute immobility. He thought he had had a similar case about a year ago. A gentleman was sent to him by Professor von Bergmann with a hardness in the left side of the palate, which felt like a diffuse new growth. Mr. Butlin divided the palate in the middle line, made an incision into the tumour, let out a little fluid, and finding no tumour behind the palate, he closed the incision and hoped that was an end of the case. But within a few weeks the patient returned, complaining of discomfort in the mouth and deep down in the neck. As there was a swelling over the lower part of the parotid gland, which felt like a soft

lymphatic gland, an operation was performed from the outside. Even then the real disease was almost overlooked, for it was a hard tumour which lay right beneath the whole thickness of the parotid gland, well-defined, enclosed in a thin capsule and lying up against the base of the skull. It was quite white on section and cut like a very firm potato. It was completely enucleated, and proved to be a typical endothelioma. Mr. Butlin advised that a similar operation should be performed in the present case.

Dr. DUNDAS GRANT said he had had two cases which much resembled the present one, and in both he was able to shell out the tumour by an incision through the anterior half of the palate. In the first he thought he would have much difficulty, and went to it in the country with galvanocautery, snares, etc.; but after making an incision through the palate with scissors he was able to shell it out quite well. The second case was very similar. They seemed like the tumours described by Paget in his well-known paper.

Mr. E. W. ROUGHTON said he had seen a tumour in a similar position and it shelled out easily by an incision through the mucous membrane. He recommended that the case should be dealt with from inside rather than from outside the mouth.

Dr. FITZGERALD POWELL thought the tumour was attached to the angle of the jaw. On palpating the growth in that situation there appeared to be considerable tension, as if it was connected with the jaw. It looked rather like a fibro- or adeno-sarcoma. He thought the Society would be indebted to Dr. Ball if he would furnish a further account of the case if the tumour were removed.

Dr. BALL, in reply, thanked members for their opinions. He would report further if the patient agreed to operation.

SWELLING OF THE LEFT ARYEPIGLOTTIC FOLD.

Shown by Dr. J. B. BALL. He said: The patient, a man aged fifty-seven, complains of discomfort in the throat, and of feeling a lump, which he tries to dislodge by frequent swallowing. He has had these feelings for about three months. There is no actual pain, and the voice is not materially affected. He has had good health, except for an occasional attack of bronchitis in the winter. There are no physical signs in the chest and no albuminuria. On examination of the throat the lateral folds of the pharynx are seen to be thickened, and these thickened folds are continued down to the level of the larynx in the form of two symmetrical and very prominent swellings at each side of the posterior pharyngeal wall. There is a pale, œdematous, and somewhat pear-shaped swelling involving the aryepiglottic fold and arytenoid on the left side. The left vocal cord is largely concealed by the swelling, but is not fixed. He has been under observation for three weeks, during which time he has taken 10 grains of iodide of potassium three times a day. No change has been observed in the condition.

Dr. DUNDAS GRANT said he believed it to be chronic œdema, of which several cases had recently been shown before the Society. Their nature seemed to be very obscure. There was a suggestion that it might be lymphomatous.

Mr. H. BARWELL agreed that it was probably chronic hyperplasia. The lateral bands of the pharynx presented very much the same swollen aspect as did the arytenoid, and that would be strongly suggestive of this condition.

Dr. JOBSON HORNE considered that the swelling over the arytenoid was largely due to œdema. He once had the opportunity of observing both clinically and also *post mortem* a precisely similar case. At the autopsy the œdema was purely local, and beneath it, in the fold running down between the cartilages of Santorini and Wrisberg, there was a slight abrasion—in fact, a small ulcer. There was some slight necrosis of the underlying cartilage. There was no tubercle nor evidence of any other disease in the larynx. Death occurred, not from the laryngeal affection, but from chronic interstitial nephritis. The movement of the vocal cord in this case negatived any very deep seated disease of the arytenoid cartilage.

PAPILLOMATA IN THE NOSE.

Shown by Dr. BALL. He said: The patient is a woman aged fifty, who has complained for some months of obstruction in the left side of the nose. There has been no discharge from the nose, nor any bleeding. Several warty growths are seen implanted on the septum, floor, and inferior turbinal, in the anterior region of the left nasal fossa.

Mr. HERBERT TILLEY suggested the advisability of removing the anterior end of the turbinal and cutting sections of the growths. The one on the inferior turbinal he thought might be in the nature of granulations round an ulcer, possibly tubercular. The procedure he suggested would settle the diagnosis.

Dr. PEGLER asked whether the case had had any treatment, and if any of the growth had been removed, from which part, also had the specimen been preserved.

Dr. BALL, in reply, said he had had suspicions that there were some granulations. She came three months ago, and a couple of the warty growths were snared off. He thought Dr. Tilley's suggestion was possibly correct. There had been no treatment beyond removal. The specimen was not preserved, but to the naked eye it was a wart-like growth. In reply to Dr. Milligan, he would inquire about syphilis; he had not suspected it.

THIMBLES FOR MAKING ASEPTIC WOOL MOPS.

Mr. CRESSWELL BABER showed metal thimbles fitting on to the left forefinger and thumb, with which wool can be easily wound round a cotton carrier. They are grooved on the opposing surfaces and have small handles by which to hold them. They are sterilised by boiling.

The PRESIDENT said it was difficult to judge as to the usefulness of the thimbles until one had used them for a time, but if they could be easily manipulated they would be very helpful. It was often impossible to keep one's fingers absolutely clean, and he thought these thimbles might be useful, especially in ear work.

Dr. DUNDAS GRANT said the thimbles acted very well indeed.

BILATERAL TUBERCULOUS LARYNGITIS, COMPLETELY HEALED FOR THREE YEARS, WITHOUT LOCAL TREATMENT, IN A MAN AGED FIFTY-FIVE.

Shown by Dr. STCLAIR THOMSON. This patient consulted me first on August 10, 1899, when he weighed 10 st. 10 lb.; to-day he weighs 13 st. 2 lb. In 1899 there were symptoms at the right apex, and his sputum contained tubercle bacilli in considerable numbers. The left cord showed irregular granulations on its posterior third, a slight infiltration of the corresponding part of the right cord. In 1900 he had a long attack of pleurisy, and his chest and laryngeal symptoms became more marked. In 1901 there was infiltration of the interarytenoid region, injection and infiltration of the right cord with sub-cordal thickening, and the left vocal process was concealed with ulcerating infiltrations.

I did not see him again for nearly two years. On May 21, 1903, I found his larynx intact except for some slight interarytenoid thickening, and with white scars over and below both vocal processes. His larynx was seen by Sir Felix Semon and Dr. Watson Williams on November 7, 1903, both of whom agreed that there was nothing amiss with it. To the latter I am indebted for the sketch he then made showing the site of the scars. I have only to add that the patient's "cure" has been carried out in Plumstead, where he shares his bed with his wife, and until I converted him he had a dread of fresh air.

EXTENSIVE TUBERCULOUS LARYNGITIS, NO LOCAL TREATMENT, COMPLETE HEALING CAUSING STENOSIS OF THE GLOTTIS AND REQUIRING TRACHEOTOMY, HEALING MAINTAINED SINCE ONE YEAR, IN A WOMAN AGED FORTY.

Shown by Dr. STCLAIR THOMSON. The husband of this patient died in 1900 of phthisis. She first attended me on March 25, 1904, for hoarseness and marked dysphagia. There was œdema-like infiltration of both arytenoids, mamillary thickening of interarytenoid fold, and some sub-glottic infiltration on the left side. Fortunately, I can hand round the rough sketch which I made at

the time. The left upper lobe was dull and there were moist sounds. The sputum was scanty and no tubercle bacilli were ever found. She was put upon general and hygienic treatment. The condition had become more marked in July, and throughout 1904 there was increased œdema of arytenoids and ulceration of the interarytenoid region. In June, 1905, it was noticed that there was impaired abduction of the cords, but that they were clear, while the interarytenoid fold was less thickened and the posterior surfaces of the arytenoids were losing their œdema-like look. In November, 1905, there was no dysphagia. The voice was clear and fairly good. For two or three months the stridor at night was heard all over the house, and it was marked even when at rest. At this time it was noted that the appetite was poor, the temperature 98° F., and dulness and moist râles on the left upper lobe, with dulness and tubular breathing at the right apex. The vocal cords were then fixed, so that while they adducted easily the amount of abduction left only a small chink. A low tracheotomy under cocaine had, therefore, to be done on February 1, 1906. Since then the patient has gained in weight, and I have gradually, but with great difficulty, converted her to believe in fresh air, exercise, and rest, while diminishing her faith in over-clothing. She breathes freely, the voice is clear, there is no stridor. The larynx is completely cicatrised. Both vocal cords possess slight movement, but this is evidently limited in action by cicatricial tissue. The glottis is reduced to a slit. The arytenoids, and, in fact, the whole larynx, is otherwise quite normal.

The spontaneous healing of such a well-marked case of tuberculous laryngitis is extremely noteworthy, and that it should result in such glottic stenosis as to require tracheotomy is, I imagine, a most exceptional occurrence. The possibility of the infection being mixed with syphilis occurred to me, but neither the history nor the appearances at any time supported such a possibility.

The PRESIDENT said that in the case he examined the lesions had healed so completely that one would not have thought any tuberculous disease had ever been present. Both cases showed that tuberculous laryngitis would get well without any local treatment.

Mr. H. BARWELL said he saw only the second case, but the Society was much indebted to Dr. Thomson for insisting on the value of rest to the larynx in such cases. He did not know whether the voice was absolutely rested in those cases, but rest certainly was important. In the second case there still appeared to be a little infiltration at the back of the posterior wall of the larynx, though not inside the lumen. Such good results were, however, very uncommon.

Dr. FITZGERALD POWELL thought these cases very interesting and

strongly bore out the view he held that the improvement or cure of tuberculosis of the larynx depended in great measure on the state of the lungs, whether the disease was active or not in the lungs. He had had cases in which the disease was quiescent in the lungs and what appeared to be a complete cure took place in the larynx, but in a year or two afterwards the disease in the lungs became active again, when inspection of the larynx took place. These cases appeared to him to raise the question as to whether tubercular laryngitis should be treated in the London hospitals or sent to open-air sanatoria.

Dr. H. SMURTHWAITE said that within the last two months he had had patients with marked tuberculous disease of the larynx under sanatorium treatment. One man, who had put on two stones in weight, had a swelling of both arytenoid joints and ulceration of the right cord, and had practically lost his voice. After six weeks in a sanatorium the swelling of both joints had gone down remarkably, but there was still slight ulceration of the cord. A case sent for sanatorium treatment a fortnight ago had greatly improved in general condition: there had not been time to see whether the larynx would improve with the lungs. Such cases as shown by Dr. Thomson enabled a much better prognosis to be given to the patients and their friends. One was generally asked whether there was a complete cure for such cases, and while it could not be said that there was, it could be stated that there were cases which did get better.

Dr. DUNDAS GRANT asked whether the ulceration involved the framework and margins of the larynx—*i. e.* the edge of the epiglottis and posterior part of the ary-epiglottic folds, so as to produce odyphagia. That symptom seemed to justify some very active measures, to enable the patient to take food. Would Dr. Thomson consider it wise to supplement the open-air treatment by local treatment of the larynx?

Mr. BABER inquired whether antiseptic sprays, such as menthol, were employed in these cases. One often saw such cases run a very chronic course under this treatment.

Dr. WATSON WILLIAMS asked how long the cases had been under observation. He (Dr. Williams) made a sketch of the condition, but he did not remember how long ago. Still, he knew it was sufficiently long ago for any impending lesion to have declared itself long since. The cases showed the excellent results from open-air treatment, combined with complete rest of the larynx. In some cases so treated, however, a localised lesion remained, very chronic, and matters could be much expedited by local removal of that focus.

Dr. DE HAVILLAND HALL said that two years ago, in the spring, a gentleman, aged seventy-two years, consulted him on account of loss of voice, cough, and loss of flesh. Before examining his larynx he (Dr. Hall) thought he had malignant disease, it having lasted some weeks; but he found ulceration of both cords, and chest examination showed a suspicion of mischief at the right apex, slight impairment of resonance, and a little crackling on coughing. Tubercle bacilli were found in fair numbers in the sputum. He sent the patient to live in the open air at Bournemouth, and gave him an antiseptic spray, consisting of menthol, eucalyptol, and oil of cinnamon, to be used every four hours, and he was enjoined not to speak at all, but to write his requirements. In addition he had 5 grs. of carbonate of guaiacol three times a day. In three months the patient returned, having put on a stone and a half in weight, the ulceration was completely healed, and when nine months later he had to see the patient over another matter, the signs of lung disease had disappeared, and the larynx was

apparently quite well. It was unusual for a man of that age, previously well, to have tubercle and recover so well.

Dr. ATWOOD THORNE said that five years ago he saw a man with marked tubercular trouble in his larynx. He at once sent him to Ventnor. He had been a heavy drinker. After four months' stay he was quite well. There was no local treatment whatever.

Dr. STCLAIR THOMSON, in reply, said the woman who had tracheotomy done had much dysphagia at one time, and had the typical cedematous arytenoids. But there was never any ulceration on the pharyngeal surface; it was limited to the glottic region. Dr. Watson Williams made the drawing of the man three years ago. The cases under discussion had not had sanatorium treatment; they had not left their homes, one of which was at Plumstead and the other at West Ham. They were not good disciples at first; they were smothered with clothes, and had never slept with the windows open. He hoped on a future occasion to bring some private patients on whom he had carried out local treatment. In reply to Mr. Baker, he would say that while sprays were useful in keeping the larynx clean in hospital patients, they were not necessary in the open-air treatment, as the larynx then got clean of itself.

BILATERAL FRONTAL SINUS OPERATION (KILLIAN).

Shown by Dr. STCLAIR THOMSON. This patient, a man aged twenty-three, was operated on in June last. The frontal sinuses were very large. Although there is some depression over the left frontal sinus, it is seen that the æsthetic result is excellent. This result is due to the careful preservation of the Killian bridge and of the septum between the two sinuses, as well as to the carefully planned and adjusted incisions. The permanency of the opening into the left sphenoidal sinus is well seen. The patient still has some pus in the right nostril, doubtless from one of the ethmoidal cells.

Mr. STUART-LOW said he had examined the case and was pleased with the result. But there was a good deal of depression over the site of the bone removed on the left side, and he suggested that Dr. Thomson should do as Killian had done in such cases, inject paraffin to remove the deformity. Killian's usual incision was a little different from that done by Dr. Thomson, being carried almost straight down to the bony edge of the nostrils. Killian's incision enabled better access to be obtained to the ascending process of the maxilla, which, of course, had to be removed.

Dr. STCLAIR THOMSON, in reply, said he would put a little paraffin in if desired. He copied the incision which he carefully learned from Killian three or four years ago. Killian pointed out that in all operations on the face the incision should be a curved one, as that was less noticeable, following as it did the natural curves of the face, than a straight cut.

STENOSIS OF THE LARYNX.

Shown by Dr. H. J. DAVIS. A woman, aged forty-four, with dyspnoea and stridor, according to her statement of "twelve

months' " duration. The glottis was stenosed and ulcerated. She had had three miscarriages and pleurisy four times, and had physical signs of thickened pleura on left side. The throat was painless; no glands were present in the neck, and the patient was emaciating.

Dr. DAVIS said she had no physical signs of active disease, but she had signs of old pleurisy. She did not originally seek relief for herself, but when attending at the hospital in charge of a child her attention was called to her stridor; this was three months ago. The case was shown for diagnosis. She was now much worse, and he thought it was malignant disease, despite the fact that she had physical signs in the lungs. There was no sputum, but she was emaciating rapidly.

Dr. DUNDAS GRANT considered the evidence to be in favour of tuberculosis.

INOPERABLE CANCER OF FAUCES TREATED WITH A BACTERIAL VACCINE OF *Micrococcus neoformans*. (Shown on June 1, 1906.)

Shown by Dr. SCANES SPICER. The patient, a man aged seventy-five, was previously shown on June 1 with inoperable cancer of the fauces and the adjacent structures. The patient had undergone a further twenty weeks' treatment with a bacterial vaccine of *Micrococcus neoformans*. He had gained 2 lb. in weight. The malignant growth had receded in one part but was more prominent in another.

The PRESIDENT said he thought the case looked a little better now than on the last occasion he saw it.

Dr. B. H. SPILSBURY gave the following description of the microscopical appearances of the growth:

Histological examination of a piece of the growth, which was removed on April 6, 1906, showed a spheroidal-celled carcinoma. The masses of cancer-cells had very uniform appearances in every part of the sections; there were no degenerative changes in the cells, but very numerous mitotic figures were present indicating a rapid growth.

The stroma of the growth was small in amount and was closely packed with connective-tissue cells, the majority of which were mononuclear cells and corresponded in morphological characters with the plasma-cells of Unna; there were small numbers also of polymorphonuclear leucocytes and a few coarse eosinophilous cells.

A second piece of the growth was examined histologically six months later on October 10, 1906.

The masses of carcinoma cells showed no alteration in character

throughout the greater part of the mass, but in a few spaces the cells had shrunk in size, and their nuclei were smaller and more compact and showed fewer mitotic figures, suggesting some slowing in the rate of growth. There were no degenerative changes in the cells.

The chief changes were in the stroma, which in places was entirely free from infiltration with connective-tissue cells and in other places showed small collections of cells which were almost all of the type of polymorphonuclear leucocytes.

In short, there appeared to be some attempt at the production of an adult connective tissue, an attempt of which there was little or no evidence in the section examined six months previously.

Mr. STUART-LOW suggested that as practical surgeons they might make use of this treatment preparatory to operation to get rid of the suppurative and inflammatory conditions of the malignant tumours, these conditions being known to be very inimical to successful results.

Dr. SCANES SPICER, in reply, said the changes in size and the different parts of the growth varied very much. He feared that the growth was rather larger again since he saw the case a fortnight ago. Injections had been regularly kept up. There was sufficient proof of the influence of the injection in the fact that though it was eighteen months since the man came under observation he was still comparatively well, and had actually gained weight. He had had a second case, which was considerably improved in the matter of cleanliness and in the reduction of the swelling, as well as in the increased mobility of the tongue and jaw. He certainly thought the patient ought to be given a chance of the treatment if he had inoperable carcinoma of the pharyngo-œsophagus; he knew of nothing more promising.

FIXATION OF THE RIGHT VOCAL CORD WITH DYSPHAGIA FOR LIQUIDS.

Shown by Mr. STUART-LOW. The patient, a woman aged fifty-six, sought relief on October 20 last, on account of difficulty in swallowing liquids. She said that she had suffered from this for three months and that it was increasing. There was a history of recurrent attacks of rheumatism. One year ago she had an attack of influenza and since then she had been very liable to catch cold. There is nothing of the nature of specific disease in her past history. She is the mother of thirteen children, most of whom are living. There is no difficulty in passing the largest œsophageal bougie nor in swallowing solids. When an attempt to drink is made the fluid apparently passes through the fauces and into the upper part of the œsophagus, when coughing begins. It seems as if some of the fluid gains entrance to the

larynx and thus sets up reflex coughing. She expresses herself as certain that cold liquids pass with less coughing than warm. The right vocal cord is seen to be completely fixed in the cadaveric position. The arytenoid cartilage during voice-production moves a little forwards and inwards, but much less than normally. The tension of the fixed cord appears to be normal.

A small mass of rather firm, enlarged glands, somewhat painful on pressure, can be felt in the superior deep cervical group on the right side. The chest shows no evidence of disease and the nervous system seems normal, and a skiagraph shows nothing unusual. She has lost weight to the extent of one stone in nine months, during the last month has felt very much less energetic than usual. The cause of the paralysis of the right vocal cord and of the peculiar symptom of coughing on trying to swallow liquids is difficult to explain; one explanation might be that there existed a malignant growth in the œsophagus implicating the right recurrent nerve, this nerve being situated more posteriorly than the left. This would not only account for the paralysis of the cord, but for the weakening of the sphincter muscle keeping guard over the entrance to the larynx. If some fluid entered the larynx on attempting to swallow liquids, the superior laryngeal being intact, coughing would ensue.

Dr. DE HAVILLAND HALL said that last year he had a lady, aged twenty-three, who complained of slight hoarseness and difficulty in swallowing liquids, though she could swallow solid food perfectly. He found paresis of the right vocal cord, and he heard that she had been exposed to cold. Probably she got a slight neuritis, and he put her upon iodide of potassium, and went in for electrical treatment. She was going out to India. She improved rapidly, and got quite well. He believed the difficulty in the present case arose from imperfect closure of the larynx. He could not say what was the cause of the fixation of the cord.

Dr. FITZGERALD POWELL said he understood there was a history of influenza in this case. The vocal cord was paralysed, but there was some movement in the arytenoid. Some time ago he had shown a similar case to the Society, and the general opinion of the members was that the paralysis of the cord was due to the toxin of influenza. The patient had had iodide of potassium and strychnine, but he got better suddenly and not apparently as the result of any treatment.

Mr. STUART-LOW, in reply, said his patient, like Dr. de Havilland Hall's, could swallow cold fluids better than warm, probably because of the stimulating effect on the sphincter of the larynx. He had not yet treated her, but proposed to try potassium iodide. The influenza occurred only three months ago, and this would be a very long time for the toxin to be still active, supposing influenza to be the original cause of the laryngeal paralysis.

A CASE OF EPITHELIOMA OF THE LARYNX.

Shown by Dr. WATSON WILLIAMS. The growth involved the epiglottis, the right aryepiglottic fold, and arytenoid region, extending to the right glosso-epiglottic fold and the contiguous portion of the lateral wall of the pharynx. There was an enlarged gland, corresponding to the tip of the great cornu of the hyoid bone on that side. The patient had complained of pain extending up to the right ear since June, and a month later hoarseness was noticed, and he had been losing flesh.

Microscopical evidence of a fragment left no doubt as to the histological character of the growth. He showed the case with a view to receiving suggestions as to the possibility of successful removal by operation.

MALIGNANT DISEASE OF THE RIGHT SIDE OF THE LARYNX IN A
SYPHILITIC MAN AGED SIXTY.

Shown by Dr. STCLAIR THOMSON. This patient has been losing his voice for about a month. Lues was contracted twenty-five years ago. The right vocal cord is concealed by a diffuse ulcerating infiltration, which spreads all over the right ventricular band, the aryepiglottic fold, and upwards on the epiglottis. The sides of the ulcer are deeply cut. There is no fungation, sloughing, or odour; some dysphagia. The glands below the right jaw are enlarged but not fixed. The right vocal cord is concealed, so that we cannot tell if its action is impaired. He has taken 15 grs. of iodide with mercury for nearly three weeks, and for ten days he has had inunctions of mercury. At first the surface cleaned up in a remarkable way, but latterly there has been no progress. Opinion was invited as to whether the growth was undoubtedly malignant, whether anti-syphilitic treatment should be given a fresh trial, and whether the case was suitable for hemi-laryngectomy.

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A CASE OF GLOSSO-EPIGLOTTIDEAN LYMPHO-SARCOMA.

Shown by Dr. DUNDAS GRANT. The patient was a man aged thirty-one, who complained of dryness and soreness of the throat of three months' duration, and of a swelling of which he had been conscious for one month. On depressing the tongue, an irregular, smooth-surfaced, fleshy growth came into view, and, by means of the laryngoscopic mirror, it was seen to involve the posterior part of the tongue so as to completely conceal the larynx. On raising

the posterior part of it a small portion of the right edge of the epiglottis was exposed; the voice was perfectly clear, and respiration so free that it was obvious that the deeper part of the larynx was not affected. There were no enlarged glands, and the microscopical examination of a small portion of the growth proved that it was a typical lympho-sarcoma. Opinions were invited as to the advisability and methods of removal, the exhibitor being inclined to think that trans-hyoid pharyngotomy would suffice.

[*Supplementary note.*—The operation, as described and recommended by Mr. Butlin, has since been carried out, and the patient is making satisfactory progress.]

Mr. BUTLIN thought that, for the purpose of discussion, it would be convenient to group together with Dr. Watson Williams' case those shown by Dr. StClair Thomson and Dr. Dundas Grant. The disease in all three cases was of the base of the tongue and upper part of the larynx. In two of them the glands were involved, but probably within the reach of an extensive operation. He was of opinion that an operation should be performed in all cases. It should comprise removal of the contents of the anterior triangle on the affected side, with ligature and removal of the external carotid artery and all its branches. It would be well at the same time to remove the external carotid artery and its branches on the other side of the neck. A few days later the removal of the primary disease could be performed with scarcely any hæmorrhage and as freely as might be desired by opening up the wound for the removal of the contents of the triangle. He had performed this operation on several occasions, and was quite satisfied that it afforded the best view of the affected parts and of the whole field of operation. Unless this were done, it was useless to attempt these operations.

A CASE OF ULCERATION (? MALIGNANT DISEASE) OF THE BASE OF THE TONGUE.

Shown by Dr. W. H. KELSON. The patient, a man aged forty-eight, first complained of swelling in his throat, and alteration in his voice in April; he was admitted into hospital August 25, when there was found to be a large, red, rounded swelling at the base of the tongue, which was bound down on the right side and could not be protruded; on the right side of the swelling was an ulcer. The administration of iodide of potassium gave no result, and a month after admission profuse hæmorrhage took place from the ulcer and the swelling subsided; the submaxillary lymphatic glands were enlarged on both sides. Since the hæmorrhage the patient has gained weight and improved in health. No tubercle bacilli or lung signs could be detected nor microscopical appearances of actinomyces. Opinions were requested as to the nature of the case.

A CASE OF PAPILLOMATA OF THE LARYNX.

Shown by Dr. H. J. DAVIS. A girl, aged eighteen, with papillomata in the larynx. Three years ago she had had the same trouble, and all the growths were removed with snare and forceps. "She kept well for three years" but now had recurrence. The growths were very easy to see, situated above and below cords, and he hoped that he could remove them again in the same way.

Dr. WATSON WILLIAMS showed a tongue clip, which he had devised and had found exceedingly useful in operations about the mouth. It was made by Messrs. Mayer and Meltzer.

Dr. WATSON WILLIAMS showed drawings illustrating the method which he had been in the habit of adopting in the operation for submucous excision of the septum, the essential point of which was a small preliminary incision made on the concave side, by means of which a narrow elevator could be inserted, so as to remove the muco-perichondrium from that portion of the quadrilateral cartilage which later corresponded to the incision through the cartilage, after the ordinary incision in the mucous membrane had been made and the muco-perichondrium lifted from the convex side, as was usual with the ordinary button-hole incision. The advantage, he pointed out, was that when the cartilage was incised there was no risk of the mucous membrane on the concave side being divided, because it had already been lifted. The method he adopted and advocated whenever suitable.

Abstracts.

FAUCES.

Langworthy, H. Glover.—*A Case of Primary Erysipelas of the Pharynx.* "Boston Medical and Surgical Journal," August 23, 1906.

A fatal case in a boy aged five. A correct diagnosis was impossible until at least two or three days after the onset of the disease. The focus of infection was, apparently, through a tonsillar crypt. There were no cerebral complications and the larynx was not involved. A bibliography is appended.

Macleod Yearsley.

Goodale, J. N.—*Systemic Infection through the Tonsils.* "Boston Medical and Surgical Journal," September 13, 1906.

The author reviews the subject of systemic infection *via* the tonsils and concludes that in infectious arthritis evidence is accumulating to show that the tonsil forms a frequent portal of entry. Although in a

given case it may be of normal size and show nothing on clinical examination, after excision it will always give signs of lacunar retention. It is, therefore, probably not necessary that organisms thus gaining entrance to the system should create local reaction in the tonsil itself. Possibly faulty drainage from the crypts affords a given organism better opportunity to remain in contact with the lacunar epithelium, to multiply on the detritus therein, and on a favourable opportunity to become drawn into the tonsillar tissue with the current of buccal fluid.

Macleod Yearsley.

Leland, G. A.—*Septic Infection through the Fauces.* "Boston Med. and Surg. Journ.," September 13, 1906.

Three interesting and instructive cases are described and commented upon.

Macleod Yearsley.

Langworthy, H. G.—*Koplik Spots: their Relation and Interest to Laryngologists.* "Med. Record," October 20, 1906.

The earliest manifestation of "Koplik spots" is upon the mucosa, about the angles of the mouth, and in the region of the gums, and the eruption may appear fully five days before the exanthema manifests itself. The appearance of the spots according to Koplik is as follows: On looking at the mucous membrane lining the cheeks (buccal) in strong sunlight a very characteristic eruption of irregular stellate or round rose-coloured spots is seen. In the centre of each spot there is a bluish-white speck. This appearance of a bluish-white speck on a rose-coloured background is pathognomonic of the onset of measles. The speck is sometimes so minute that strong light is necessary to render it visible. The number of specks at the outset may be less than half a dozen. In a short time they become more numerous, and the rose-coloured spots become confluent, so that they are diffusely red patches of buccal mucous membrane studded with bluish-white specks. They are seen on the inner surface of the lips and gums." The presence of this eruption is a sure sign of the immediate advent of measles.

W. Milligan.

ACCESSORY SINUSES.

Jack, F. L.—*Report of Four Cases showing the Result of Killian's Operation.* "Journal of the American Medical Association," July 21, 1906.

All four patients had suffered for years from chronic suppurative ethmoiditis with abscess breaking into the orbit. The operation adopted was practically the Killian operation. The results were good, and the advantages claimed are the full exposure of the diseased area which is possible, the freedom from risk, and the possibility of the operator being able to clear away at one sitting all infected and diseased ethmoidal cells.

W. Milligan.

LARYNX.

Richards, Geo. L.—*What should be the Attitude of Public Sanatoria towards Cases of Tubercular Laryngitis; with Suggestions as to the General Plan of Treatment of such Cases in Sanatoria.* "Boston Med. and Surg. Journ.," August 9, 1906.

The author discusses the percentage of laryngeal lesions in pulmonary tuberculosis, and considers that at least one of the resident physicians of

state sanatorium should be a trained laryngologist, with a sufficiently good laryngeal technique to do whatever may be necessary in treatment, and that no patient should be admitted without a careful examination of the larynx by a competent laryngologist. *Macleod Yearsley.*

EAR.

Jack, F. L.—*The Blood-Clot Dressing.* "Transactions American Otolological Society," 1906.

The experience of many eminent surgeons goes to show that blood-clots in long bones break down and become infected. To secure organisation of the blood-clot absolute asepsis is requisite. In the treatment of the mastoid wound an absolutely aseptic field is practically impossible owing to the relation of the previously infected middle ear to the bone wound after removal of the mastoid cells. In a series of sixty cases suffering from acute suppurative middle-ear inflammation with acute mastoiditis where the blood-clot dressing was adopted the following results were obtained: Average length of treatment in hospital twenty-six days; at time of discharge condition of mastoid wound was as follows—granulating well in 5 cases, nearly well in 38, and healed in 9 cases. The clot became disorganised in 9 cases in two days, in 20 cases in seven days, in 18 cases between seven and fourteen days, and in 1 case after fourteen days. Uncomplicated healing was obtained in only 4 of the 60 cases after intervals of seventeen days, fourteen days, eight days, and twenty-two days.

After due consideration the author fails to see that the treatment by the blood-clot method has any advantage over the more ordinary methods in use. *W. Milligan.*

Thomson, I. I.—*Acute Mastoiditis, its Prevention, Diagnosis, and Treatment.* "Med. Record," September 8, 1906.

In this paper the author discusses the various signs and symptoms of acute mastoiditis. With regard to pain as a symptom, the author regards it as not by any means constant; in fact, in many cases it is conspicuous by its absence. Temperature also is not of any great diagnostic value. A symptom of great importance is the amount and the persistence of discharge. Where there is genuine doubt as to whether or not pus is in the mastoid area the author inclines to the performance of an exploratory operation, believing that it is really conservative surgery to operate early, not only to prevent extension of disease, but to conserve the hearing power. In operating for acute suppurative mastoiditis, it is important to open and drain all cells from base to apex, working forwards towards the zygoma and backwards to the sinus if necessary, and leaving a broad-bottomed trough which ultimately fills up with healthy granulations. In order to allow the soft parts to fall in, and to prevent deformity, a portion of the prominent posterior canal-wall and anterior mastoid region should be removed. It may at times be necessary to stimulate the growth of granulation-tissue by the application of balsam of Peru or friction. To prevent the skin from dipping into the wound it is advisable in packing to see that the gauze does not slide over the edges of the wound, otherwise the incursion of epithelium is favoured. It is also advisable at each dressing to gently press the skin backwards away from the edges of the wound. *W. Milligan.*



The late Mr. SPENCER WATSON, M.B., F.R.C.S.

THE
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OBITUARY.

W. SPENCER WATSON, M.B.LOND., F.R.C.S.

ONE of the pioneers in British rhinology has recently passed away in the person of Mr. W. Spencer Watson at the age of seventy. For a number of years he has lived in retirement and he has scarcely been heard of among the present generation of rhinolaryngologists. In the history of the surgery of the accessory sinuses of the nose his name ought, however, to hold an honoured place. In his work on "Diseases of the Nose," published in 1875, he gave an excellent account of "abscesses of, or suppuration in, the antrum." In it he stated that "in some cases the only indication of suppuration going on in the antrum is the ozænic stench and the occasional discharge of pus." He drew particular attention to the fact, now well recognised but then scarcely known, that there may be "no pain nor distension and no external objective signs whatever of the presence of pus in the antral cavity." He further states that "examination of the nostrils by means of the speculum should not be omitted, though the evidence conveyed by it may be merely negative, but it may disclose a trickling of pus into the middle meatus; and if, on inclining the patient's head to the opposite side and again examining the nostril, we find that the flow of pus into the middle meatus is very much increased, the diagnosis is rendered much clearer as to the antrum being the part involved." In view of this it is strange that the history of the subject should with us be supposed to start at the time of Ziem's

epochal publication, though it must at the same time be admitted that it was Ziem who most loudly proclaimed the fundamental truth of the modern surgery of the antrum. Had Watson been less retiring, nasal surgery as we now understand it would have established itself earlier in this country. Among the first to show cases illustrating the successful application of these principles was the late Mr. Lennox Browne in 1879. Spencer Watson was an active ophthalmologist and wrote a valuable monograph on diseases of the lachrymal apparatus. His colleagues in that department held him in the highest esteem, and his memory may well be cherished by those who have profited by the advances in modern rhinology.

Our photograph of the late Mr. Spencer Watson is from a painting by Mr. George Spencer Watson, to whom we are indebted for permission to reproduce the portrait.

DEVIATION OF THE NASAL SEPTUM.

AN important stage in the history of operative procedures for the correction of deformities of the nasal septum has been reached. This will be seen from a study of the reports of the discussion upon the subject which took place in the laryngological section of the British Medical Association held in Toronto this year. Just as it has more than once occurred in the past, certain operations are becoming less popular, and other methods—one in particular, that of submucous resection—have been received with unbounded enthusiasm in many quarters.

That we have had many advisers in the past, and numerous operations, which bore a curious resemblance to one another although different operators' names were attached to them, everyone knows. The questions which now arise are interesting, and the hitherto perplexed student will ask, Are our difficulties at an end? Have we at last found a method which will please the majority? for of course no one expects to please that troublesome minority which has been the bugbear from all time in every branch of human activity. In other words, is there now a fairly unanimous opinion amongst those qualified to judge that submucous resection is the best operation? The discussion at Toronto will probably be regarded as historical, and while it has done much to clear the air and to define our present position, a careful study of the different

views expressed will show, as the President, Dr. Dundas Grant, said when summing up, there is yet room for judicious eclecticism in the choice of operation for the correction of a deviated nasal septum.

The history of operations upon the nasal septum is an extremely interesting one, and may well be studied at the present time, if for no other reason than that it enables us to appreciate what had long ago been done to establish the principles. The history, moreover, dates much further back than is even assumed by some of the later writers, and while it is true the latest methods have proved very successful, it should not be forgotten that the earliest pioneers had not the advantage of Listerian principles, the advances in anæsthesia, general and local, and recent means of controlling hæmorrhage. In fact, advances in general and special surgery and methods of examination by a gradual process of development have made for success in operations now which were impossible a few years back. Granting all this, however, the work done by the earliest operators was marvellous, and, while the technique had to be improved, the principles of the operations for the correction of the nasal septum have long been well understood.

Bosworth, in the 1889 edition of his work, clearly points out this, and says Quelnalz in 1750 recognised the condition like others even before his day, and advised that attempts to correct the deformity by digital manipulation should be made. The earliest indication of operation is that of Dieffenbach in 1847, who advised that the projections should simply be sliced off. A very interesting procedure in view of the recent study of submucous resection was that suggested by Heylen as early as 1845, because he first dissected the mucous membrane from the surface, removed the deformed portion, and in this way sought to leave the mucous membrane intact. Chassaignac in 1851 not only recommends the dissection of the mucous membrane but the difficulty of resiliency is recognised, for he recommends that certain incisions should be made through the deflected part and also that plugs should be inserted afterwards until the parts solidify.

Demarquay in 1858 made the operation more serious by opening the cavity externally along the ridge of the nose, and Linhart in 1862 points out the necessity of dissecting up the mucous membrane on both sides of the deflecting cartilage before removing the offending part. During the following decade there does not seem to have been much done by way of following up what had previously been done, but in the early sixties Blandin devised a punch

by means of which he could remove small discs, but he does not seem to have looked upon the perforations that followed as morbid lesions. Ruprecht and Bolton in 1868 again produced punches, the latter being interesting inasmuch as it was an instrument which produced stellate incisions.

In the seventies we have a classical work from Adams, whose paper, in the year 1875, with the description of his well-known forceps, clamp, and ivory plugs, shows how much he was impressed with the important fact that it is not only necessary to replace a deviated septum, but it must afterwards be retained in its normal position. In 1879 Steele's stellate punch was described, but it is in the eighties that we can see the great work of the present day boldly outlined. Jurasz, in 1882, published a modification of Adams' forceps, and in the work of the same year an extremely interesting one is that of Hartmann, who returns to the question of the submucons operation. In the same year Seiler published his work upon burrs and their employment. In 1883 Petersen, whose name will always be associated with submucons operations, as well as Hartmann, makes important contributions to the subject. The year 1883 is also notable in connection with the work of Maurice J. Asch, because in this year this operator performed his first operation and set about systematic study and improvement in technique, with a regard for details which culminated in his well-known paper seven years later. The work was still further advanced by the investigations of Roux, Trendelenberg and Hubert. When Bosworth's work on the nose and throat was published in 1889 many other methods were being employed—thus, Seiler's burrs had been followed by the trephines of Curtis, and Woakes and Bosworth had operated largely with saws. Moreover Jarvis had devised a cutting forceps and suggested the projecting portion being pierced by a needle and then removed by means of a snare, and John B. Roberts suggested linear incision with a bistoury along the prominent line of the deflections, the pressing of the parts into position, and the introduction of a long steel pin to keep them in place.

Freer, in his recent statement at Toronto, does not hesitate to say that the merit of the first announcement of the essential principle of the method of resection of the deflected cartilage and bone belongs to Kreig, and in any case his good work about this period is fully and generally acknowledged by writers upon the subject. Towards the end of last century the different operations mentioned attracted a considerable amount of attention, and, in addition,

Gleason's well-known operation was fully established in the year 1896, and the operation of Douglass in 1893. In 1901, Roe's excellent paper, giving details of his method, was published, and Moure's operation, largely used in France and England, was described in the same year, while a year or two afterwards the classical papers of Freer and Killian showed beyond all doubt that the method of submucous resection had been performed to such an extent that some of the popularity which now attends it was almost sure to follow as a natural result. To judge fairly in questions of priority is always a difficult matter, and in so doing controversy frequently results, but the names of Freer and Killian will always be honourably associated with the operation of submucous resection. Freer admits that Killian began his work before he had done so, but at the British Medical Meeting in August, 1902, the reports of which are published in the *British Medical Journal* for that year, it was quite clear that Killian had mastered the details of the work. Freer claims that Killian's first published papers, which caused so many to follow him, were published after his. It is at least fair to say that to Freer, in America, and to Killian, on the Continent, we are mostly indebted for the present position of the operation, although many other names—such as those of Hajek, Menzel, Ballenger, Fetterolf, and Jansen—deserve to be mentioned in any critical review of the subject, because of their contributions to the technique and their modifications.

In addition to the operations above mentioned we must not forget that some others, especially in serious obstruction at the anterior part of the septum, make their incision through the mucous fold of the upper lip, as in the case of Loewe and Gaudier, but only under exceptional conditions is it likely these operations will often be performed.

In this country comparatively little has been done in this direction, and Dr. StClair Thomson, in his paper opening the discussion at the Toronto meeting, quotes the language of certain authorities at a meeting of the Laryngological Society of London in 1902, which conveys a very graphic picture to the reader's mind of patients who had suffered much at many hands even after operation, wandering round different surgeons' consulting-rooms seeking relief from their distressing symptoms. There can be no doubt, however, that in the last three years the operation has obtained great popularity, and one of the most recent comers into the field of operation is Dr. StClair Thomson himself, whose two papers have been published this year. It will not detract

in the least from their educative value if it be pointed out that the author speaks in his first paper to the *Lancet* about the methods (and instruments) which he recommends at one part, and at another he says that it is one similar to Professor Killian's. No doubt Dr. StClair Thomson has modified the technique to suit himself like many others, and improved some details when operating upon his first thirty cases; but at the Royal Medical and Chirurgical Society of London, where he read his first paper, and at the Toronto meeting, Dr. Dundas Grant pointed out clearly that the operation he performed was simply Killian's.

The main principles involved in this operation are, amongst others, aseptic procedure, anæsthesia, and the removal of all obstruction to the normal functions, but if they are grouped in this way and each carefully considered the statements, on many points, involve a great deal not yet settled. There is still the choice of the operation, the best technique, general or local anæsthesia, shock, the after-treatment, the avoidance of subsequent pathological conditions such as perforation or new deformities, and on all these points great light was thrown by the discussion at Toronto.

Much could be written upon most of the points referred to, but there are a few which stand out more prominently than others. First of all, the choice of the operation, and in this connection it may be well to remember Sir Felix Semon has remarked that no operation should exceed in magnitude the importance of the symptoms. Numerous as the different operations are, they may be classified as, firstly, the submucous of which Freer's and Killian's methods may be taken as types; secondly, incisions differing in number and direction, such as those of Asch, Moure, Douglass and Allen, and, lastly, that of Price-Brown, whose H-like incision is strongly recommended by this writer, who is a strong believer that such a large excision of the cartilage and bone of the nose is detrimental; thirdly, operations by comminution of which we might look upon those devised by Adams, Roe, Kyle, and Krieg as types; and, fourthly, methods like those of Bosworth, Curtis, Woakes, and Seiler by means of trephines or saws. Of course in certain cases combinations may be advisable.

The selection of operation in a given case is not made easier by the fact that no satisfactory classification has been made. Comparatively few, however enthusiastic they may be, suggest that the submucous resection is the operation and the only one. The discussion at Toronto showed that a number of experts thought that it might answer in 90 per cent. of the cases, and even if one were

to accept this view there are still the 10 per cent. to consider. It is difficult to believe that such operations as those of Asch, Gleason, Roe, Douglass, Price-Brown, and Harrison Allen will be lost sight of, and for the good reason that many of the originators of the different operations still claim excellent results. It must always be remembered that familiarity and experience in an operation often enable a particular operator to arrive at the desired results quite irrespective of the fact that other operations in the hands of others may do likewise.

The question of performing operations with safety largely depends upon aseptic methods, so far at least as these are possible in the nasal cavities, and in this connection it may be noted that Dr. StClair Thomson makes the statement that the vestibules—the only really septic parts of the nasal chambers—are cleansed with spirit, and if a moustache is present it should be thoroughly washed, and he apparently bases his statements upon papers published by him and Dr. R. T. Hewlett some years ago. Other writers, such as Park, Wright, and Hasslauer, have not accepted their views. Lately Drs. C. J. Lewis and A. Logan Turner have still further considered the difference of opinion which exists regarding the presence or absence of micro-organisms in the healthy nasal chambers, and they explain difference in the results they obtained by saying that had they trusted to the procedures relied upon by Drs. Thomson and Hewlett their sterile specimens taken from healthy nostrils would have numbered a dozen instead of three. These writers, like Dr. StClair Thomson, say a distinction should be drawn between the vestibules and the interior of the nostrils. It should be noted in connection with the function of the mucous membrane that Drs. Hewlett and Turner inferred, as a result of their experiments, that the nose contained numerically few organisms, that inoculation was a very slow one, and that they were of diminished vigour, but revived after a period in a suitable medium. There is another thing, however, which should not be forgotten in this connection, and that is, that sometimes patients who require an operation for the correction of deviation of the septum may have other pathological conditions present at the same time in one or both nostrils. The interior of the nostrils should therefore be rendered as free of pathogenic organisms as possible before operation.

The question of anæsthesia is also an important one. Doubtless local anæsthesia, especially when combined with active agents, such as those contained in adrenalin, for commanding hæmorrhage, has done much to make things easier. Naturally, the extent of

the deformity, the condition of the patient, the experience of the operator, and many other things, must be considered in making a choice. Upon these points the discussion at Toronto will prove exceptionally valuable.

The question of the technique has received a great deal of attention, and deservedly so, and doubtless much remains to be done, notwithstanding all that has been accomplished. Some writers have minimised the difficulties, and beginners will do well to remember that if they undertake this operation in a light spirit they may be disappointed; on the other hand, although the procedure is tedious and requires careful dissection, too much should not be made of the matter, because the operation is one which can be easily enough mastered, as can be seen from the number of surgeons in different countries who have successfully performed it. The objection to a thin, membranous septum, sometimes flapping within the nostril, instead of the hard, natural structure, has deterred some operators, and the possibility of injuries, such as blows, afterwards to the face not being well sustained, has been pointed out. Advocates of the submucous resection operation say that flapping is caused by too little tissue being removed, and Freer quotes cases in which injury has taken place subsequent to operation without harm. Of course, time will be required to clear up these points, and ten years hence one will be in a better position to judge of the importance of these and many other objections.

The question of the operation being performed in children is not an easy one to answer. Freer and others think that it can quite easily be performed in early life, but Killian does not take the same view. Casselberry thinks that in young children the Watson-Gleason method is quite adequate, can be done in a few minutes under general anæsthetics, and has the merit of leaving the natural developing framework intact.

The question of prophylaxis should never be overlooked at any time, and in this connection the remarks of Dr. M. C. Smith are important. Speaking as a dentist, he indicated certain procedures in the case of young persons which might prevent the necessity of operation later in life.

Notwithstanding all objections and difficulties, there can be no doubt that the operation of submucous resection of the deformed parts is daily becoming more popular, and deserves the greatest consideration. While sufficient space can be obtained in slight cases by removing small portions of the turbinated tissues, the policy of taking away normal structures is not always to be recommended.

All the same, many will agree that there is yet room for judicious eclecticism. In an excellent paper by Dr. Winslow on the present state of the operation, read before the American Laryngological Association this year, he states: "While some degrees of septal deviation is so common that it may almost be regarded as a normal condition, a deviation becomes pathological only when it interferes with normal nasal function, producing consequences that can rationally be attributed to the deformity; according to Beaman Douglass, this occurs in from 11 to 12 per cent. of cases only. Some of the most marked deformities that I have ever seen caused no detectable disturbance. We should operate therefore only for the relief of definite symptoms, and not simply because of anatomic abnormality." The same writer also remarks in another part of his paper that "the best treatment of deviated septum may consist in avoiding the operation."

**A STATISTICAL REPORT OF THE RESULTS OF OPERATION
IN SARCOMA OF THE NOSE BY METHODS GENERALLY
ADOPTED, WITH A PLEA FOR THE MORE EXTENDED
USE OF THE ELECTRO-CAUTERY IN SUITABLE CASES.**

BY J. PRICE-BROWN, M.D.,
Toronto.

WRITERS differ widely from each other in their general views in regard to this disease, and in introducing the subject a brief *résumé* of prevailing opinions may not be out of place.

Lennox Browne, in his voluminous work upon "Diseases of the Nose and Throat," does not even mention the existence of sarcoma of the nose.

Shurly says that myxosarcoma is the variety that occurs most frequently within the nose, and that the usual seat of growth is either the middle turbinal region or the external wall, thus granting the primary origin of the disease within the nasal cavity. He also says that while the original growth may be pedunculated, the pedicle is soon lost, the base rapidly becoming broader, until it finally loses itself in the mass of involved tissue.

Kyle, on the other hand, says that "primary sarcoma of the nose is not of frequent occurrence, but as a rule has its origin in adjacent structures, and spreads thence into the nasal cavity."

He insists upon early and complete eradication as the best line of treatment, to be accomplished by the use of the curette and galvano-cantery.

Bosworth, in his report of forty-one cases, treats of it as a primary affection, occurring in a single tumour that may arise on the outer or inner wall of either nasal cavity. He further shows that there is no clinical evidence in support of Weber's idea that sarcoma is usually accompanied by several deposits of the same neoplasm in neighbouring regions, and also that the growth is soft and flabby, and that the tumour is invariably pedunculated.

Coakley says that sarcomatous degeneration is also occasionally met with in cases of nasal polypi and other benign tumours after these have been removed a number of times, a view which is accepted by many surgeons; and also that the appearance of sarcoma within the nose may be the first evidence of the presence of sarcoma within the antrum. He says that the growth has a hard feel, as of solid tissue, and is not usually very movable, even when of considerable size.

Harris, in a paper published several years ago, refers to a series of 103 cases reported up to that date, including his own, and from the investigation of which he draws the following deductions: that round-celled and spindle-celled sarcomata are about equally frequent in their occurrence; that the cartilaginous septum is the part most frequently involved, and next to this the middle turbinal body; that it usually proceeds from a well-defined pedicle; that the growth is soft to touch and bleeds easily; and that sarcoma is a small tumour, usually pedunculated and rarely multiple. In speaking of treatment, he says that while many cases require removal by external radical operation, there are others in which an intra-nasal operation is alone justifiable, but that no matter how treated, more than half the cases are ultimately fatal.

Halsted believes that the period of life most susceptible to this disease is between the fortieth and the fiftieth years. His graphic description of the symptoms is worth repeating: "The conspicuous absence of pain while the disease is confined to the soft tissues; the presence of epistaxis as a prominent symptom; the nasal obstruction, so great that both breathing and eating become distressing to the patient, while speech becomes difficult, and the senses of smell and taste are either lost or severely impaired, until finally, as the disease advances into the accessory sinuses or the cranial cavity, pain becomes severe and continuous, and death either from sepsis or exhaustion is the result."

In order to bring the results of investigation down to the most recent date in the preparation of this paper, I sent one hundred circulars to leading laryngologists in the United States and Canada, and as a result I have received about fifty replies. Although not by any means as satisfactory as one would like, they contain much valuable information, and I extend to the gentlemen who forwarded the answers my most cordial thanks. A synopsis of these reports I here give:

Früdenenthal writes me that he must have had under observation in hospital and private practice "surely twenty cases or more." Unfortunately, he has no distinct records of them. But the percentage of permanent recoveries after intra-nasal operative treatment he reports as "none," and after external operations likewise as "none."

Otto Stein says that he must have seen between twelve and twenty cases of nasal sarcoma, which were treated by "various methods" with "varying results."

Thompson reports twelve cases, nine of which were inoperable. Hence these nine, with Stein's twelve to twenty, and Früdenenthal's twenty, are not tabulated in my present report.

Now and then, though rarely, a detailed report of a single case has been forwarded, which in itself is intensely interesting, giving at a glance a vivid picture of the whole scene. For instance, Freeman reports one that he referred to Keen for external operation. I quote his own words: "The sarcoma evidently began in the naso-antral wall and extended into the frontal sinus, antrum, ethmoid, and sphenoid, by finger-like projections; but it did not seem to infiltrate the lining of these cavities, as it was easily shelled out, leaving them, with the exception of the orbital plate and the naso-antral wall, practically uninjured. The incision was so extensive that the interior of all the accessory cavities on the affected side could be plainly examined. The septum was not involved, and after the operation the eye was kept from falling into the antrum by packing. Although the operation was done eight or ten years ago, there has been no return.

Norval Pierce mentions six cases. All were treated by intra-nasal methods, although of what nature is not mentioned. All recurred but one, in which there was complete removal at a very early date. In this case the recovery was permanent. In two of the cases external operations were subsequently done with only temporary benefit.

Chevalier Jackson reports eight cases. All were operated on by

the external method. Two of these disappeared afterwards, so that no trace could be made of them. But the other six all died of recurrence of the disease at varying intervals after operation.

To be definite, the following is a summary of all cases reported as operated upon, whether internally or externally, in which the patients were kept under observation until final results were obtained.

Number of cases, 51. The right nasal cavity was affected in 22, the left nasal cavity in 29, and both cavities were affected in 9. The septum was affected in 11, and the anterior in 27. Intra-nasal operations were performed in 19 cases, and recurrence occurred in 13 of these. Extra-nasal operations were performed in 33 and recurrences occurred in 25. There were 38 deaths.

In several of the above operations were done both intra-nasally and extra-nasally.

Permanent recoveries after intra-nasal operations, 6 out of 19, or 31 per cent.

Permanent recoveries after extra-nasal operations, 8 out of 33, or 24 per cent.

Total permanent recoveries after operations of whatever kind, 14 out of 51, or 27 per cent.

We must add to these the inoperable cases and those refusing operations, which presumably would all be fatal.

In one point the consensus of opinion among authors appears to be unanimous, and that is in the absence of pain when the soft tissues are alone affected.

Before speaking of my personal experience in the treatment of this disease, I may say that I have drawn a wide distinction in my meaning between intra-nasal operations and extra-nasal operations, all classes of intra-nasal operations being included in the one, the work being done through the anterior naris only, and without injury to it; and in the other, all classes of external operative work done by surgical incisions through the true skin, and by this means aiming at the removal of the sarcomatous growth.

Personally I have had four cases under treatment. Only one of them suffered from pain within the nasal cavity. The main signs and symptoms in all four were intra-nasal. All were males, their ages being eighteen, twenty, fifty, and fifty-eight years. All were subject to severe epistaxis upon very slight provocation. With one exception there was complete blockage of the affected nasal passage. By the process of exclusion, as well as by the signs and symptoms, the disease in three of the cases was pronounced

to be sarcoma by competent medical authorities before the cases were referred to me for treatment; and in each of these two or more distinct microscopical examinations verified that the diagnosis of sarcoma was correct. In the fourth case histological examinations were made at my request, and the case was pronounced a spindle-celled sarcoma. In this patient the growth was the smallest.

Although the results in my cases have been unusually favourable I do not give any credit to the skill of the operator but to the method of operating—and I emphasise the latter, because the work has been principally done by the use of that much-abused instrument the electro-cantery knife.

The first three cases were reported in the August number of the *JOURNAL OF LARYNGOLOGY* in 1903. At that time eight years had elapsed since the final operation upon the first case. The man was well then, and is well now, with no recurrence whatever of the disease.

In the second case, and this was of the spindle-celled variety already referred to, occurring in a man aged fifty, the growth had been removed about a year when the case was reported. At the present time—three years later—he is still a healthy man, following his daily occupation as a fireman, and free from any redevelopment of sarcoma.

The third case was the most extensive purely intra-nasal sarcoma that I ever saw, filling the left nasal cavity, bulging the anterior naris, flattening the nose and cheek, more than half filling the naso-pharyngeal space, and holding the soft palate immovably in a horizontal position. This case was referred to me in October, 1902, now four years ago, and was reported by me with the exhibition of pathological specimens and micro-photographs at the meeting of the American Laryngological Association at Washington the following year. As, however, it was considered rather premature to report so recent a case, I again read a paper upon it, reporting progress, at the annual meeting of the same association at Atlantic City in 1905. I still further exhibited—the patient himself this time—at the Laryngological Section of the British Medical Association in Toronto, in August, 1906. There have been slight recurrences, at the junction of the posterior naris with the naso-pharyngeal vault, up to February last, but they were always controlled by a touch of the cantery. The man is well nourished, and presents a rugged and healthy appearance. The nasal cavity is wide and free throughout its whole extent, exhibiting in some

measure the great size which the growth had assumed before its removal. When required he keeps the passage free from accumulations by the use of an oleaginous spray. His occupation is that of telegraph operator, in which he is regularly employed. He learned the art since the removal of the sarcoma four years ago.

These cases were all treated by intra-nasal electro-cautery operations, the parts being anæsthetised by cocaine. The first one, operated upon eleven years ago, was treated before the advent of adrenalin, and was attended by some terrific hæmorrhages. Still the work went on, with the result already stated. In the second and the third adrenalin was used freely and with marked advantage. In the third, however, the hæmorrhages were often exceedingly severe, possibly in some instances due to a desire to remove too much at one sitting. These three men are all well, busily following their occupations in Toronto to-day.

In all these cases I believed that the growth was mainly, if not entirely, confined to the nasal cavity. The method of operating, particularly in the third case, was as follows:

After producing local anæsthesia and anæmia by the free use of cocaine and adrenalin, a large tubular speculum was introduced into the nasal passage as deeply as possible, and then perpendicular incisions with the electro-cautery knife, at a high degree of temperature, were made into the basal attachment of the growth on the turbinal side. They were made as deeply as possible without producing alarming hæmorrhage. The moment this threatened to be severe the operation ceased, and temporary tampons would be inserted to control the bleeding; but almost invariably these would be removed before the patient left the office.

On his return, one or two days later, the cauterised tissue would be removed either by snare or forceps, and the parts cleansed by sprays. Then anæsthesia and anæmia would again be induced and the operation repeated. Thus, successively, piece by piece, and day by day, with the electro-cautery blade at almost a white heat, the sarcomatous tissue would be dissected away, working gradually from before backwards, until the posterior naris would be reached, and the patient to his delight would be able to blow his nose through a free passage again—something he had not done before for months, perhaps for years.

CASE 4.—This, my most recent case, was referred by Drs. Carleton and Langstaff.

On August 2, 1906, the patient, a retired butcher, aged fifty, was first seen by me. Pathological sections had already been

excised and microscopically examined, and the case was pronounced one of malignant disease.

I found on examination that the left nasal cavity was filled completely from the anterior to the posterior naris with a dark red growth, dense in character, but which bled readily on being touched. I removed a section, and microscopical examination proved it to be a round-celled sarcoma.

Family history.—His father had died at the age of seventy-two, presumably of some cerebral trouble, but on *post-mortem* examination his family physician had found a hard cancer of the stomach.

Personal history.—A number of years ago small growths, presumably polypi, had been removed from time to time from the nose; and latterly, while otherwise healthy, he had been troubled with a good deal of yellow discharge from the left nostril. This was supposed to arise from left antral disease. During the present year the left nostril had gradually closed up by the formation of the new growth, and as the cavity filled the discharge lessened. For six weeks there had been practically no discharge, but an external swelling had formed over the left nasal bone in the region of the lachrymal sac. This had been opened with a lance, giving exit to a free discharge of pus, particularly on pressure. Accumulation recurring, relief was given from time to time until I saw him—the conclusion being that the external discharge of pus was really a vicarious outlet from the closed antral cavity.

There was no particular enlargement, but there was oppressive headache and some soreness of the nasal region. The temperature varied from 99° to 101°. Mouth-breathing was compulsory, and there was a severe odour of antral disease. He had lost twenty-five pounds in weight during the last four months. The corresponding cheek was not swollen, but there was eversion of the lower eyelid, which the patient affirmed had existed for years, and was due, he said, to severe exposure during a winter storm.

After careful examination I arrived at the conclusion that the attachment was probably to the outer wall; that while the middle and the inferior turbinates were involved, the vault and septum might be free, and that if the antrum was affected it would be near the middle of the naso-antral wall.

I believed also from my past experience, notwithstanding the age of the patient, that I would be justified in operating upon similar lines. To this the patient gladly assented, although at the same time I told him of the risks of operation and the possibilities of non-success and recurrence of the growth.

For each operation upon the growth the patient came a mile and a half on the street cars, walked into my office, walked out again, and returned in the same way.

August 7.—After applying cocaine 8 per cent. and adrenalin 1 in 1000, the first operation was done as already described, the cuts being made with the electro-cautery knife at a bright red heat. The tissue was dense and hard to penetrate, but the bleeding was slight, care being taken not to cut in too deeply on this tentative occasion. Pain also was slight. Faintness there was none. No tampons were inserted.

August 8.—Returned to office, sloughs removed. Operation repeated.

August 9.—Exactly similar treatment with operation.

August 10.—Also similar to the previous occasion with operation.

By these four operations the tumour which had filled the left nasal cavity almost to the tip of the nose had been dissected back for more than an inch, leaving the vault, septum, and floor clean. On the outer wall the front parts of the middle and inferior turbinals, which had been softened in character by the development of the disease, had been dissected away, without any appearance of recrudescence.

As I was leaving the city for a few days, the man returned to his own home, sixteen miles away, during my absence.

August 20.—Under exactly similar conditions to those already mentioned, he again came for treatment, and electro-cautery operations were done under cocaine and adrenalin anæsthesia as before, on August 20, 21, 22, and 23. The sloughs were taken away on the day following each operation before renewing the burning. By this time the greater part of the middle and inferior turbinals had been removed and the patient could force air pretty freely straight through the passage. Of course, together with the removal of the sloughs daily, the cavity was freely sprayed out with an alkaline solution, washing away the *débris* as well as the pus, which found freer outlet from the antrum.

August 25.—On this day the last electro-cautery operation was done, burning away, so far as could be seen, the last remnants of sarcomatous tissue. The lower turbinal was entirely gone, and a large part of the middle turbinal as well. The naso-antral wall was still intact. The movements of the soft palate could be easily observed through the nasal passage, and the patient could blow out that side of the nose with much greater freedom than he could the well side.

For several days the passage was freely sprayed, and as pus was still constantly oozing from the ostium, chloroform was administered to him at the Western Hospital, and I opened the antrum through the central part of the inferior meatus. Here the bone was soft and easily penetrated. A wide opening was made, but anterior and posterior to the site of operation the bone seemed to be of normal density. Probably at this spot the osseous tissue was involved in the disease. The operation was attended with very little hæmorrhage. Pus mingled with blood and some sloughing tissue were washed out, and then the antrum was swabbed with peroxide of hydrogen.

After this date no further operative treatment of any kind was required. The antrum was washed out once a day with warm sterilised water, and for some days this was followed by the application again of peroxide. Then the latter was discontinued, as the condition improved. Still, the nose was regularly sprayed two or three times a day with Dobell's solution.

As the operations were comparatively painless, with little loss of blood—the canterisations being confined to the line of sarcomatous attachment—the depressive effect of the operative treatment was slight, and for a couple of subsequent weeks the patient seemed to rally. Then a species of malaise set in, accompanied by rise of temperature, with furred tongue, tympanites, and many of the symptoms of typhoid.

The operations being over, he returned home to the care of his family physician, and as the discharge from the antrum steadily decreased the intervals between the washings were made longer. From this time I saw him, through the kindness of his physician, once a week, and personally washed out the antrum. Five weeks after opening the antrum it was washed out for the last time, as pus had disappeared. There were no sloughs, and the water came out of the ostium of a clear pale straw colour. There was also no return of sarcomatous tissue, the passage being perfectly free from anterior to posterior naris.

In one way I was disappointed. The extra-nasal pus cavity, notwithstanding the regular antiseptic treatment it received, did not close up after the free opening of the antrum, and careful exploration by the probe failed to discover any connection between the two. Still, the discharge from the external cavity gradually diminished under treatment, although it did not disappear.

When I last saw the patient, in consultation with Dr. Langstaff, six weeks after opening the sinus, the nasal condition was the

same, but he was suffering from low delirium, sordes round the teeth, and dark, heavily furred tongue. There was some effusion within the abdomen and extremities, although examination of urine showed no trace of albumen.

It seemed to be clearly a case of septic infection, possibly from absorption of ptomaines from the sarcoma, possibly from the continued presence of pus in the antrum and facial cavity, or from both combined.

The patient died exactly seven weeks after opening the sinns, seemingly not of sarcoma, as there was no visible sarcoma present, but of sarcomatous septic infection.

Fatal although the result was, I believe the operations as done upon this patient were both justifiable and advisable, inasmuch as while the suffering from the operations was slight the gain in comfort to himself and friends was of a very marked character. The distressing respiration disappeared, the fulness and pressure in the face was relieved, and the progressive deformity of the nose ceased to exist. All these would have been severely and continually aggravated while life lasted if relief had not been obtained.

Further still, from my experience in former cases, as well as in this one, inasmuch as the growth seems to be entirely removed, I feel convinced that the intra-nasal operation gave greater freedom and comfort to the patient than would have been probable by external operative treatment, and the disastrous results attending the latter in advanced cases are so great that I would not advise it in a case like this.

The advantages of intra-nasal operations over extra-nasal operations in nasal sarcoma, in cases in which the large bones of the face are not involved, are very marked indeed, while, unfortunately, the methods that can be successfully used are very limited. Of my four cases, not one was a pedunculated sarcoma when referred to me for examination. The nearest was the second case, but even in this one the base was as broad as the growth itself. It is impossible to snare these widely attached sessile growths away. And when we try, our earliest reward is more likely to be an alarming hæmorrhage than anything else. I well remember such a result in my first attempt at operation in my third case. After applying cocaine and adrenalin freely, I passed a snare along the floor of the nose in the hope of grasping and removing a good-sized segment to begin with. For a moment I was delighted with a successful result. A smooth oval piece of the

growth as large as a pigeon's egg dropped into the bowl. For some minutes I could not examine it, as the hæmorrhage was enormous, and required vigorous and tight packing to check it. When, however, I could take a look at my pathological prize, it proved to be a large piece of gauze, which at some former time had been inserted in the nose of the patient to check a bleeding, and which had not been removed.

Neither can these large sessile growths be cut out of the nose successfully by means of knife or scissors. When small and pedunculated no doubt they can. But as sarcoma of the nose in its early stage is painless, these cases rarely come into the hands of the specialist until they are well developed and have lost their pedunculated form. The base of the growth becomes widely sessile; and it would be simply impossible to dissect out through the narrow naris such a hæmorrhagic tumour as a sarcoma with attachment along the whole of one side of the cavity from the anterior to the posterior choana.

Possibly it is for this reason that so many of these cases are referred to the general surgeon for external operation, while it would be much better cosmetically and in every other way for the patient if the rhinologist could successfully remove the growth intra-nasally.

We are living in an age of brilliant operative surgery, in which the clean cut, done once and for all, is considered the operation *par excellence*, and it is only natural that the laryngologist should be willing and desirous to emulate his surgical brother in the accuracy and finish and finality of his work—alas for the patient, the finality is sure enough in nasal sarcoma! Leaving out the twenty cases reported in the one instance as all fatal, and the others that either disappeared or were inoperable in the list already given, there were only fourteen permanent recoveries out of the remaining fifty-one cases—27 per cent. I fear this is the worst report that has yet been published, but I have the record over the signatures of the men who so kindly and promptly answered my questions—and all honour to them for doing so.

Granting, then, that the external surgical operation rarely results in permanent cure, and that internal operation, neither by knife, nor snare, nor scissors, nor curette, nor all combined, can remove intra-nasally a large sarcoma having an extensive basis attachment, why not accept the electro-cautery knife as the instrument of excision, when by its judicious and patient and regularly repeated use the work can be successfully and safely accomplished,

for the time at least? Not only can this be done, but by the removal of the sarcoma in this way we have the additional advantage, over an external operation, of retaining a wide, patulous, nasal cavity, through which the growth can again be attacked and destroyed if recurrence should take place.

The claim I make is that inasmuch as a large majority of the cases of nasal sarcoma originate in the soft tissues of the nose—even Freeman's case, described so graphically, illustrates this point—they can at almost any time be operated upon with the electro-cautery, provided the bony framework of the nose has not become affected with the disease, that in many of these cases a cure can be accomplished by thorough and careful and painstaking treatment, and that even in cases usually considered inoperable great and beneficial relief can in some cases be secured to the patient by the same means.

BRITISH MEDICAL ASSOCIATION.

Annual Meeting, held at Toronto, August 21, 22, 23, 24, and 25, 1906.

SECTION OF LARYNGOLOGY AND OTOTOLOGY.

(Report of Proceedings, continued from p. 569.)

J. DUNDAS GRANT, M.D. EDIN., F.R.C.S. ENG., *President.*

A DISCUSSION ON THE TREATMENT OF DEVIATIONS OF THE NASAL SEPTUM.

INTRODUCTORY PAPER.

By STCLAIR THOMSON, M.D., F.R.C.P. LOND., F.R.C.S. ENG.,
Physician for Diseases of the Throat in King's College Hospital; Surgeon for
Diseases of the Throat, Nose, and Ear in the Seamen's Hospital,
Greenwich.

LET me first express the pleasure I feel in being honoured by a request to open the subject of our discussion to-day. I feel it the more, as this Section promises to be, not simply a meeting of British laryngologists, but a congress of English-speaking specialists.

I take it that the efforts of the opener should be directed to

limiting the subject we are called on to debate, while bringing out the points which promise to be most fruitful in discussion. If I omit a good deal of what one would find in a formal treatise or essay on the subject, it is because I realise that I am speaking in a gathering of experts, where much of an academical nature may be taken for granted. We are here to confer on matters which are still in course of evolution, to clarify points which are still hazy, to exchange views on dangers or difficulties, to render more certain and simple methods which at present are uncertain or complicated, and to get rid of outgrown conceptions and proceedings.

The field of discussion is cleared for us by the title of debate. We are not asked to consider the pathology or indications for treatment in septal deformities, but to debate the methods of cure. In opening this discussion I will also endeavour to abide by the request of our President—that is, that our remarks should, as much as possible, be based on personal experience. In this way each of us may hope to add something of value to the subject, and no one need aspire to embrace it all.

That the subject is well chosen will be evident to anyone who cares to peruse a debate at the Laryngological Society of London, held three years ago,¹ devoted to "The After-treatment of Intra-nasal Operations." Although this debate included operations on the turbinals, much of it was concerned with what we are called on to discuss this morning, and the remarks of Mr. H. T. Butlin paint a vivid picture of the troubles which, until quite recently, we all met with only too frequently. He said :

"While I have had no difficulty at all in many cases, there have been other cases in which no kind of after-treatment has seemed to be attended with success. The more one does for some patients the worse they seem to be. The difficulty of preventing adhesions, of maintaining the large passage one has made at the time of the operation, of raising the valleys and keeping them up, of lowering the hills and keeping them down, etc., is enough to choke off the youngest and most stout-hearted of nasal surgeons. There have been patients with nasal troubles on whom I have operated whom I have afterwards heartily wished I had never seen. Of course, I hear of nasal surgeons who never meet with such cases as these. I can only congratulate them. But I can truthfully

¹ *Vide Proceedings*, November 6, 1903, vol. xi, p. 1, reported in the *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, January, 1904, vol. xix, p. 22, and the *Laryngoscope*, January, 1904, vol. xiv, p. 48.

say that I have been consulted by patients of many of the best nasal surgeons in this town on account of the failure, or very partial success, of operations which they have undergone; and I have no doubt, on the other hand, that some of my failures have in like manner consulted some of my colleagues among the members of the Laryngological Society. Each of these patients always seems to think that, had the operation been performed by some other surgeon than the man who did operate, he would have been a sound and happy man."

In opening the above debate Sir Felix Semon deplored that the after-treatment should occupy a period of many weeks. He described an imaginary typical case of nasal stenosis, and after detailing the formerly usual treatment, he laments that only too often the net result is that when the healing of the wound has been completed, the permanent enlargement of the passages is much less considerable than it was at the moment of the completion of the operation.

Many other members of the Laryngological Society were equally candid, and expressed a want of satisfaction with septal operations. Our debate to-day will, I have no doubt, demonstrate how recent progress has altered this.

Deviations of the septum include obstructions caused by deformities in the quadrilateral cartilage, the ethmoid, vomer, or maxillary nasal spine. Any attempts to classify these deviations are unsatisfactory. Even the division into two groups of cartilaginous and bony deviations fails to embrace the majority of conditions met with. When, occasionally, the deviation is limited to the cartilaginous septum, the operation of Asch will restore the patency of one obstructed nostril. I have not performed it more than half a dozen times; they were carefully selected cases, and the results were satisfactory. Moure's operation I have never tried, but I have seen the results, and think they can be improved upon. I have no experience of the Gleason or Hajek operation, and it has always seemed to me that it would only partially correct the deviation in one nostril, while tending to obstruct the opposite one. A bony deviation, springing from a more or less vertical septum, has generally some cartilage in part of its length. It can be removed with a saw. I have no experience of electric drills or trephines, nor of electrolysis.

But the majority of septal deviations are compounded of deflections and outgrowths of both cartilage and bone. In many cases both nostrils are more or less obstructed. Until recently I knew of

no method which could deal with such cases satisfactorily. To produce a large perforation in the septum always appeared to me inartistic, unsurgical, and in many cases ineffectual, for the obstruction not infrequently ran so far back as to be beyond it. Our President has expressed the opinion that it is most undesirable to produce a perforation. It substitutes one deformity for another; and as Mouret and Tonbert observe, it is not a treatment, but a *confession d'impuissance*.¹ To shave off the crest of these deviations seldom leaves any tangible patency, while those rhinologists who talk of "simply pushing the weakened septum into the median line" can only be admired for their faith in the malleability of the septum, while we congratulate them on the tolerance of their patients, who will bear the necessary renewal of packings or splints for three weeks afterwards. The rough, unsurgical, and ineffectual use of Adams' forceps and such like barbarous contrivances already belongs to the past history of rhinology.

For my own part, the deviations most requiring treatment were formerly just those in regard to which I felt most powerless. In some cases I avoided operation on the septum by removing part of the turbinals, but in many I felt compelled to advise the patient to tolerate his nasal stenosis, as I knew of no satisfactory method of correcting it. A few years ago I would only operate on half a dozen septa in a session, but now I feel justified in operating on forty or fifty. This confidence is begotten of the adoption of the method of excising septal obstructions by the submucous method, and I take it that our debate will be largely concerned in discussing the methods, difficulties, advantages, and disadvantages of this operation, while considering simpler measures which may sometimes be used instead of it. My own technique need only be briefly outlined, as I have recently described it in detail.²

If I give a short sketch of it, my purpose is chiefly to refer to points which call for discussion. Anæsthesia and ischæmia are produced by the surface applications of cocaine and adrenalin, employed twenty to thirty minutes before starting the operation. With the patient on an operating table, in a sitting posture, an incision is made on the convex side $\frac{1}{2}$ cm. behind and parallel to the junction of skin and mucous membrane. The incision, with practice, can be carried through the mucosa and cartilage at one stroke, without puncturing the opposite side. The mucosa and muco-perichondrium are stripped up off the convexity. Through

¹ *Société Française d'Otologie, etc.*, May, 1906.

² *Med.-Chir. Trans.*, June, 1906; and *Lancet*, June 30, 1906.

the incision in the cartilage the membrane of the concavity is similarly separated. The main part of the denuded cartilage is then excised with Ballenger's swivel septum knife. Remaining portions of cartilage, and the ethmoid and vomer if deviated, are removed with Hartmann's forceps. The nasal maxillary spine, or the anterior extremity of the vomer, is next laid bare and attacked with chisel and hammer. By prising this up we can expose the vomer with any spur or crest, and separate its muco-perichondrium on each side down to the floor of the nose. The vomer is then followed backwards as far as necessary, sometimes even close to the neighbourhood of the choanae, until we find that the fleshy septum hangs perfectly plumb in the middle line. All this can be done through the one incision described. If the free end of the quadrilateral cartilage projects into one nostril, the incision is made over it. The incision is closed with one or two sutures, and the nostrils are lightly packed for forty-eight hours with sterilised cotton-wool, well smeared with plain vaseline. Afterwards no treatment is required beyond the occasional use of a cleansing alkaline lotion or some oily application. Removal of portions of hypertrophied turbinals may subsequently be required, especially in the formerly unobstructed nostril.

The first case of this operation, shown at the Laryngological Society of London, was presented by me on May 6, 1904. At the debate in November, 1903, already referred to, I expressed the opinion that this was the most promising of septal operations, and further experience has strongly confirmed me in this view.

The objections which may be raised will call for our discussion to-day. The chief ones are: (1) the difficulties of the technique; (2) the anaesthesia; (3) haemorrhage; (4) stitches; (5) possibility of collapse of the bridge of the nose; (6) danger from subsequent blows on the nose; (7) unsuitability for children.

The technical difficulties disappear with practice and patience. Haemorrhage has never given me trouble, and I am surprised to read of surgeons who refer to it and the frequent mopping required during the operation. The method of anaesthesia described renders the operation painless until we come to the removal of bone, which is disagreeable. I have tried, and have abandoned, the submucous injection of cocaine and adrenalin. My first cases were done under chloroform, and I have recently reverted to it for nervous patients requiring an extensive operation. The stitches expedite healing. No collapse has occurred in any of my patients, and Freer's experience shows that there is no added risk from subsequent blows

on the nose. Under sixteen to eighteen there is increased difficulty in operating in narrow noses, and at an earlier age there is the possibility that it might hinder complete development, and the risk of the deviation re-forming if not very completely removed. But other surgeons will doubtless give us their experience on these points.

The more actual objections which occur to me are the following: (1) incompleteness of operation; (2) flapping septum; (3) previous operations.

Some surgeons—not infrequently those who are late in adopting the method or whose experience is limited—have recently attempted to disparage the difficulties of the operation. Such an attitude can only be based on incomplete removal of deviations, often induced by anxiety to perform it quickly. Other operators even say that this completeness is uncalled for, as it is sufficient to free the obstructed nostril to secure “reasonable patency.” But if we are able, by an operation so rapid in its results and so free from disagreeable after-treatment, to secure a complete and permanent bilateral air-way, surely it is only right that we should do this for our patients. It is incomplete operation which causes the flapping condition in which, during quick inspiration, the fleshy septum is sucked against the outer wall of the narrower side, thus leaving the patient with only one free nostril. If the operation is carried out perfectly, both sides are equally free, and the septum, though flaccid, will remain vertical. The careful preservation of the perichondrium secures greater firmness of the fleshy septum. Previous treatment renders the operation more difficult; the mucosa may be changed into scar-tissue adhering closely to the septum, or the two mucous membranes may be united together, and the task of separating them becomes most difficult. This last difficulty is a strong argument for operating completely at the first intervention.

The advantages of this operation may be summarised as follows

- (1) no general anæsthetic required; (2) no hæmorrhage; (3) absence of pain and shock; (4) no reaction; the post-operative temperature seldom rises above 99° F.; (5) absence of sepsis, with its possible extension to ear, sinuses, or cranial cavity; (6) no splints required and no plugs after forty-eight hours; (7) rapid healing, without crust-formation; (8) no risk of troublesome adhesions; (9) short after-treatment; (10) speedy establishment of nasal respiration; (11) suitability for all deformities of cartilage or bone in the septum requiring treatment; (12) the space gained is not only that resulting from a vertical septum, but the extra room

secured by removal of the cartilage, which is sometimes an eighth of an inch in thickness; (13) no ciliated epithelium is sacrificed; (14) accuracy of result can be depended on, and the prognosis is, therefore, the more definite; (15) improved appearance of the nose externally.

I do not wish to magnify our office, but it is wrong both to our patients and ourselves to minimise, by adopting a half-measure, an operation which, with skill and patience, can result in so much permanent benefit to those requiring it.

Nasal treatment is too often labelled as consisting in "trifling operations." So long as the beneficial results were insignificant this may have been justifiable, but as we advance to more certain and perfect measures surgery should claim as assured a position when directed to the nose as it does in regard to other organs or cavities of the body.

At the same time, we must not allow ourselves to be carried away in regard to the submucous operation. While it is applicable to all deviations, even the worst, it must only be employed when we are convinced that it is called for and that no simpler measure can take its place. And when we talk of a simpler measure, we should mean one which is not only of easier performance, but which in its execution and after-treatment will be as effective in curing the patient *tuto, cito, et jucunde*.

INTRODUCTORY PAPER.

BY JOHN O. ROE, M.D.,

Rochester, N.Y.

THE title of this discussion brings us at once to the well-recognised fact that there is more than one method employed for the correction of deviations of the septum, although the author of each method may regard his operation as the *sine quâ non* for all forms and conditions of deviations of the septum that we may encounter.

It would be interesting, did time permit, to note the evolution and also the desuetude of the different methods that have been brought forward for the purpose of straightening deformed septa or for the removal of the obstructing portion, from the Blandin punch down to the last method of resecting the cartilaginous and bony framework. With the exception of the punch—which removes rather than corrects the deformity, and leaves that which is most undesirable, a perforation of the septum—every method

has some desirable feature which makes it better adapted for certain cases and conditions than any other method.

It often happens, however, that some operators who attempt an approved method do not grasp its principles fully or have not acquired or do not possess the necessary skill, or who employ the operation in cases where it is not adapted, and, failing to get the good results reported by the author, abandon and condemn the operation.

In many cases the deviation of the septum may be so complicated as to require for its correction the combination of two or more methods in one operation. For instance, in the deviation of the cartilaginous portion without marked thickening, the Watson, the Gleason, the Asch, or the Roberts and the pin method of holding the septum in place may be especially advisable; while, if complicated with deviation of the osseous or osseo-cartilaginous portion, the method of fracturing it by means of comminuting forceps, the writer's method, is believed to be the best and easiest. Therefore, when different conditions are combined in the deformity, different operations should be combined for its correction.

The operations required for the correction of the nasal septum may be divided into those required for the preliminary work of putting the nasal passages in proper condition and those for the straightening of the septum itself. The preliminary work of removing the associated abnormalities of the nasal passage before the main operation is, judging from the lack of reference to it by the writers on the subject of deviations of the septum, commonly overlooked, although highly important.

In determining such associated abnormal conditions, it is important to ascertain as far as possible the etiology of the deflection, whether resulting from an extrinsic cause or from an intrinsic condition, for the etiology of the deflection often has an important bearing upon its treatment. If a diathesis, a strumous, tuberculous, rachitic, or a syphilitic disease has been the predisposing cause, the general condition of the system should first receive particular attention.

If due to defective development, or to unequal development of the nasal chambers, to disease or disorders of the septum or other portions of the nose, no preliminary constitutional attention may be required; but it is still important that all such conditions should be taken into consideration in the correction of the deviated septum, in order properly to provide nasal passages of equal capacity for respiration.

Having determined these conditions, it is also necessary before correcting the deviation of the septum to remove such conditions as have contributed directly to the cause of the deviation, or are active in maintaining it. If, in the case of a child, the deviation be due to a contracted superior maxilla and a high-arched palate, the result of obstructed nasal respiration from adenoids and enlarged tonsils, these latter conditions should first receive attention; the tonsils and the adenoids should be removed and the jaw expanded by the orthodontist to its normal proportion, when, in many instances, the septum and palate will resume their normal position.

If the septum has been crowded over by an enlarged or expanded middle turbinal cell, or deformed turbinated bones, these should be removed, for it would be impracticable to restore the septum to its normal position with these obstructions standing in the way.

It is also highly important to remove such conditions as would cause either nasal passage to be obstructed when the septum is placed in the median line. It is quite common to find nasal passages on the concave side of the septum more or less obstructed by hypertrophy of the turbinals, enlarged ethmo-turbinal cells, polypoid or other growths. While not impinging upon the septum in its deflected condition, these obstructions would, in most cases, close the passage completely if the septum were put in the median line.

It is likewise necessary to remove minor irregularities of the septum, except when the operation of submucous resection is to be performed. In many instances enchondromata and exostoses and local hypertrophies of the soft tissues are found upon one side of the septum, giving it the appearance of being deflected when viewed from that side only.

Frequently we find a pad of tissue located opposite a vascular turbinate, produced by frequent attrition of the erected turbinate against the septum, causing what I have somewhat figuratively termed "septal corns." These conditions should, as a rule, be removed beforehand, so that the septum is reduced to a uniform thickness throughout, permitting the parts to become healed before the operation for the correction of the deviation of the septum is undertaken.

On undertaking the main operation it is especially important to carefully select the operation best suited to the form and conditions of the deflection, and the associated conditions of the nasal passages.

If there is a marked thickening of the septum, the submucous resection is especially called for. In other cases, if the set or lower attachment of the septum is at one side of the median line, and otherwise generally straight, the Watson or Gleason operation is especially adapted. If the deflection is confined to the cartilaginous portion the Asch might in some cases be of special service; whereas, if the osseous or the osseo-cartilaginous portion is deviated, the Roe operation by the use of fenestrated comminuting forceps is the one to be selected.

As I have already stated, no one operation is adequate to all conditions in all cases, but each is adapted to a certain variety; and, therefore, one operation is often a supplement to others. The one operation which I have mentioned, which will be found more often to meet the requirements of different cases, or to supplement other operations, is the Roe method of fracturing the septum by comminuting forceps.

Deviations of the septum, as first and best classified by Jarvis, may be divided into osseous, osseo-cartilaginous, and cartilaginous.

The most frequent form is the osseo-cartilaginous, occurring in about 60 per cent., while deviations of the cartilaginous portion alone do not exceed 30 per cent. Therefore, other things being equal, the form of operation best adapted for the correction of deviations of the osseo-cartilaginous portion should be twice as often called for as those adapted for the correction of the cartilaginous portion alone. In nearly all instances the bend in the septum found in the osseo-cartilaginous cases takes place at or just behind the osseo-cartilaginous junction or articulation; consequently, in order to overcome all resistance, it is necessary to fracture this portion of the septum so as to change the direction of that portion of the septum below this point, much in the same manner that the direction of the hang of a door is changed at its hinges.

This operation, therefore, is of special service in correcting deflections of the osseo-cartilaginous portion, and in those cases in which the general direction of the septum at this point requires changing, and is, therefore, a valuable supplement to other operations. It also becomes a valuable adjunct to the submucous resection operation, where there is no marked thickening of this portion of the septum, rendering it unnecessary to resect the osseous portion when it can be so easily and quickly fractured and placed in the median line.

In these cases of moderate deflection, the long deviation, this

operation will be found of special service, for it is with the greatest ease that the septum can be placed in the median line.

For overcoming the cartilaginous resistance supplementary incisions at the salient points nearly through the cartilage from one side to overcome the resistance may be required.

In dealing with those cases of marked local thickening of the septum, a favourite method of mine is the submucous removal of sufficient amount of this thickened portion to reduce the septum to its normal thinness. This I do by raising the perichondrium or periosteum from the convex side throughout this thickened and deflected portion. This is carefully cut away with a cartilage knife or saw, as the case may require, and the elevated perichondrium replaced and held there by gentle packing of the nostril. In this way the removal of the entire cartilaginous or lower portion is avoided with a better result and comparatively no liability of perforations. Spurs, ridges, and excrescences of the septum I also remove in this same subperiosteal manner.

The comparatively new operation of submucous resection has recently become so popular that every bent septum, regardless of conditions, is at once elected for this operation, which in many cases is much better corrected by other operations, with very much less liability to large perforations resulting therefrom.

This is particularly the case in thin septa, in which the tearing of the perichondrium or periosteum is quite apt to take place, and which I have found difficult to avoid, or the vitality of the membrane is so seriously impaired thereby that perforations result.

It is important to refrain from the performance of submucous resection in these cases where the lower portion of the nose is undeveloped and inclined to flatten already, and when any further weakening of the support would lead to depression of the anterior portion of the nose. This liability should be taken into special consideration in the case of children, where the development of the nose is not completed.

The enthusiasm for the operation of submucous resection is very likely to cause the operator to overlook this danger of so weakening the septum as to cause flattening of the anterior portion of the nose. While this liability is disclaimed by many operators, it is nevertheless true, the writer has observed, in many cases that have been operated on by some of his *confères*, that this result is liable to take place; and in children, in whom the development of the nose is incomplete, these developmental centres should not be removed.

INTRODUCTORY PAPER.

BY GEORGE R. McDONAGH, M.B., L.R.C.P.,
Toronto.

IN undertaking to discuss the subject of operations for the correction of deviations of the nasal septum, I cannot help a feeling of embarrassment in attempting to do so before such a distinguished audience, all of whom are so intimately acquainted with every feature of it. I fear that I am unable to add much that is new to the discussion or to bring forward any new operation, but having had a fair experience in dealing with these cases for many years, I shall merely restrict myself to expressing any opinions I may have formed based on the results of my own work.

I think that it will be generally admitted that the operation which has been most lately introduced, namely, the submucous resection operation, deserves the foremost and fullest consideration. In suitably selected cases no other operation which has been proposed has ever, at least in my hands, produced nearly such good results, and I think great credit is due to those men who have introduced it and have done so much to devise the instruments and elaborate the delicate technique required for its success. Before speaking of this or other operations for the correction of nasal deviations, I wish to allude first to the prime necessity for the operation—that is to say, the obtaining of sufficient space in the nasal passages for free breathing. Other ill effects are, of course, often produced by septal deviations, such as various neuralgic pains, headache, sneezing, and perhaps asthma and hay fever; but the obstruction to free breathing through the nose is the most important consideration, and it is from this point of view chiefly that I wish to discuss the operations for the correction of them. In many cases, even when there is some deviation of the septum, obstruction to free breathing is kept up more by enlarged, or hypertrophied, or intumescent turbinals, than by the deviation itself, and in many cases these enlarged turbinals may have tended to produce, and still tend to increase, the septal deformity. Therefore I would urge, first, the importance of giving such attention as may be required to these other causes of obstruction before undertaking what may be considered a rather serious operation on the septum. I do not think that a perfectly symmetrical septum is by any means a matter of special importance, or that slight deviations, small spurs or ridges—if they chance to exist—must necessarily be removed, unless, indeed, such unsymmetrical

septum or spurs interfere with normal nasal breathing or cause other symptoms of importance. With this view in mind, therefore, and before discussing the complete resection operation, I wish to refer to a large number of cases which are difficult to classify, but in which much simpler operations will suffice to attain the desired result—that is, free breathing space—without resorting to the rather radical and difficult operation of submucous resection. Such cases are those in which there is marked thickening of the bone or cartilage, spurs, ridges, and such like outgrowths on one or perhaps both sides of the septum, without much or any corresponding concavity on the other side. In such cases I do not think it necessary (or at least in very few of them) to do the complete excision operation. I think other and simpler methods will suffice. I have been in the habit of doing what I might describe as a modified submucous operation, by raising the mucous membrane off the spur or ridge, as is done in the ordinary resection operation, and then with a knife or Bosworth saw removing the cartilage or bone as nearly to a plane as possible, and finally replacing the mucous membrane over the cut surface. This is the same operation in principle as that proposed by Bosworth long ago, but it has the great advantage of requiring only a brief time for healing, and so avoids the long process of granulation required and the accompanying discomfort to the patient which exists when the mucous membrane is removed with the bone, as in the Bosworth operation. I have done this simple operation quite frequently and have been almost always satisfied with the result. It certainly will not produce a straight septum in all instances, but in such cases as I have referred to, namely, when the obstruction is due to outgrowth or thickening, a satisfactory breathing space can be obtained. A simple type of deviation, and frequently met with, is a slight vertical ridge just behind the columella. Ordinarily this does not obstruct breathing materially, but when the person is lying on the opposite side the ala on the deviated side falls in against the ridge and acts like a valve in preventing inspiration. In such cases, if the mucous membrane is elevated and a strip of cartilage cut off with the knife, it is astonishing how much relief is obtained, not so much from the amount of tissue excised, but that it has been sufficient to prevent the valve-like action with the ala. In many cases also I have had excellent results from what is known as the Gleason operation, in which a U-shaped or horse-shoe-shaped flap is made, including the deflected portion, which is then pushed through into the opposite fossa. A better result is

usually obtained in this operation when some thickening of the septum exists, or when, as in vertical S-shaped deviations, there is some projection or shoulder on the concave side on which the flap will catch, and which will hold it in position without artificial supports. With the Asch operation I regret to say I have not had good success. Probably the fault lay more with the operator than with the operation. But in all operations of this character, where incisions are made through the septum and the fragment placed in the new or straight position and held there by artificial means, such as pins, plugs, or tubes, and even when these are worn for many weeks, there always exists the tendency, owing to the natural resiliency of the cartilage, for the parts to eventually resume their former positions.

Although I have mentioned these older plans of operation first, I do not wish it to be understood that I think they at all compare in usefulness or in perfection of result to the complete resection operation, or that they can do more than take its place in certain cases, but rather to suggest that if a simpler and safer plan will suffice in any instance to attain the desired result that plan should be resorted to. Of the submucous resection operation I cannot speak in too high praise, and in suitable cases no other operation can take its place.

The special class of cases to which it seems to be particularly adapted are those in which there is deflection without much or any thickening of the cartilage—as, for instance, dislocation of the columnar cartilage, obstructing one nostril, and also deflection of the cartilage more posteriorly or of the perpendicular plate, but without thickening. In such cases no other operation ever gave me satisfactory results, and I think I have tried most of them. I have tried parallel incisions, stellate incisions, and other varieties, and have endeavoured to so weaken the cartilage as to overcome its resiliency completely, and I have had my patients wear the Asch tube or some modification of it for many weeks, with, at the time, apparently good results; but in three or six months later more or less return to the old deviated position had taken place.

For such cases I think a solution of the difficulty is to be found in the resection operation. In all these cases of simple bending of the septum to one side, which used to be the most difficult for me to manage, I can now assure my patient with reasonable confidence of a good result. As far as I can judge from numerous articles written about the resection operation, the writers are of the same opinion that in all cases every fragment of bone and cartilage down

to the maxillary crest should be removed. I cannot, however, bring myself to believe that such very complete excisions as removal of the whole of the vomer, cartilage, and perpendicular plate can often be necessary, and it may be that the enthusiasm for thorough operations on the septum, and perhaps the degree of expertness arrived at by the operator, has caused the pendulum to swing beyond a judicious limit. If by any chance this should be so, a happy medium will be reached in due time, and when the operation is restricted to suitable cases only, and to the removal of such portions of the septum only as interfere with nasal breathing, it will be one of the most valuable in surgery.

It is unnecessary for me to refer to the technique of this operation. This has been most thoroughly elaborated by writers on the subject, and the essential principles of the technique are now fairly familiar to all. Different writers differ more in detail than in principle, and each operator will adopt such modifications as may seem to him most convenient in carrying out his ideas. Of the objections to the operation which I have noted, I may say, first, that the difficulty of performance should not be held of great consideration, because with practice that can be overcome, and ought not to be argued against the principle of the plan. Secondly, there is the danger of the falling in of the bridge. Ordinarily this does not seem to take place, certainly not in recently operated cases; but in the event of blows or falls on the nose subsequently, I imagine that serious deformity might result, and this is an argument against a too radical operation, if it can be avoided. Also the eventual results of the operation on young people before the nasal framework has arrived at full development are uncertain. Thirdly, the danger of perforation of the septum is not great, certainly not of large ones, and small perforations do no more than sentimental harm. Besides, as we become more expert in operating, we may fairly expect perforations to be of rarer occurrence. Fourthly, the introduction of horsehair sutures are, I think, a decided advantage, particularly, of course, when a perforation has been inadvertently made, but in other cases as well the sutures tend to hold the mucous membrane in place when it might be dislodged accidentally by the packing. As to the dressing, I have found that a strip of thin rubber sheeting or oiled silk placed over the septal mucous membrane before the gauze packing is introduced greatly facilitates its removal when that is necessary, as it avoids any adhesion of the gauze to the mucous membrane, and therefore lessens the danger of disturbing its position. As to the anæsthesia,

I find cocaine gives practically complete anæsthesia, and, except in very nervous patients, allows of satisfactory manipulation, but I have observed considerable depression following during that night and next day. Whether this is due to the cocaine I am unable to speak with certainty, but I think it is. As to the position of the patient, I have found the sitting position tend so much to syncope that I have adopted by preference the horizontal position, with the head fairly high. The inconvenience to the operator is only slightly increased.

Finally, as to the operation in children, I believe that, unless very necessary, it would be well to postpone it until more nearly full development of the nasal framework has taken place. Evidence of Eustachian or middle-ear catarrh, for instance, or other symptoms of gravity, would, I fancy, justify the operation in children, but in such cases surely no more of the cartilage or bone should be removed than absolutely required.

In conclusion, I wish to state that, other things being equal, I think a patient is better to be in possession of the natural supports of his septum—that is, the cartilage and bone; if any plan can be devised short of removing these supports, and if any simpler or less radical operation will suffice, that should be performed. Also, I do not think it judicious to advocate the complete resection operation for septal deviations, or to recommend that more of the cartilage or bone should be removed than is absolutely necessary to attain the object for which the operation is undertaken.

THE PROBLEM OF THE CORRECTION OF DEFLECTIONS OF THE NASAL SEPTUM SOLVED BY THE SUBMUCOUS RESECTION.

BY OTTO T. FREER, M.D.,
Chicago.

THE enthusiasm with which the modern submucous resection was received a few years ago indicated the dissatisfaction of rhinologists with the older methods for the correction of deviations, which depended on forcing the septum into a vertical plane after various incisions through it, or which, not even attempting this, were satisfied with the sawing off of the apex of deflections under the name of spurs, crests, or ledges. The reason for the easy victory of the submucous resection over the procedures mentioned was, that whatever its method of performance, its principle, that of

sacrificing as superfluous the deflected cartilage and bone, seemed reasonable and was in accordance with the anatomical conditions as opposed to the less rational attempt of the older fracturing methods, which tried to force the elastic, resilient structure of the septum into a vertically and horizontally straight line, a proceeding to which the faults of uncertainty of result and violence of performance necessarily belonged. The submucous resection not only owed its immediate popularity to its correct principle, but its continuance in favour is also due to it, its followers realising that failure to obtain perfect results is due to faults in their own technique and not in the logic of the method. Although the submucous method, therefore, seems to be in no danger of in turn being displaced by another way of operating and is constantly gaining adherents, it still has able opponents, while many are as yet but half convinced of its merits, fear its results, or, despairing of being able to execute it, adhere to the older procedures. For these reasons, to hasten its universal acceptance it still needs defence and advocacy and assurance on the part of the experienced that it is within the range of ordinary skill. The chief cause why the submucous resection has not, however, even in its short existence, displaced all other procedures is the fact that so far it does not represent a uniform standard operation but is a conglomeration of more or less suitable methods, differing widely in their idea of the proper mode of performance, none of which has universal vogue, and which have not much in common beside their recognition of the correctness of the principle of excising the deflected cartilage and bone. The different views of so many advisers are bewildering to any one who wishes to take up the submucous resection and obviously inspire distrust of its merits, especially as a view of the execution of some of the procedures advocated does not create confidence in it. If the first window resection observed by a student had been one I saw performed by an exponent of a certain method a short time ago, he would have been convinced that the operation was barbarous, painful, exhausting to both patient and surgeon, and imperfect in its results. While the older advocates of the submucous resection differ as to essentials, the confusion is increased by a number of new authors who, possessing but moderate or little experience, straining to be original and giving little heed to what has gone before, are continually trying to create the whole procedure anew. They commonly include in their methods errors discarded by their more experienced predecessors, devise a new instrumentarium possessing no especial

originality or fitness for its purpose, and always commend its simplicity as its chief advantage. Not understanding the completeness of result obtainable with more elaborate means, they are satisfied with the partial one they attain with their crude ones. Such writers retard instead of advancing the cause of the submucous resection, for their followers are apt to be far from convinced that it is the only way. Nevertheless I so regard it; for my experience with 178 operations has shown me that, if rightly performed, it may be relied upon with absolute certainty to remove any deflection, no matter how extreme, hard to get at, or extensively bony, with less injury, suffering, and after-treatment than when any other method is used. It is this perfect assurance of success that is one of the best features of the submucous resection, and the recent statement by a writer on the subject that it is fitted for but 90 per cent. of the deviations encountered, and the remark of another that it is only suited to curved scoliosis, and not to extreme angular deviations of the septum, show that these authors do not understand the possibilities of the method they attempt to practise. I say, as formerly, that the submucous resection is the best means for the correction of all deflections without exception, and that it is especially suited to extreme and difficult ones. In time, what is of value in the many articles on the subject will be assembled into a uniform and standard manner of performance, but this desirable result can be much hastened if the newer writers cease to try to invent the operation and instruments all over again and choose the best from what already exists in such profusion, for the time has come for an impartial and thorough study of the subject by observers who, unbiassed by methods of their own, will give what seems reasonable in the various modes a trial and weld what proves feasible into a classical submucous resection. At this time, however, no one should speak until a large material and a study of the subject from the bottom entitles him to do so. At present the authors of longer experience can relieve the submucous resection of much that impedes it by showing what their work has taught them to regard as wrong tendencies of the method, and I shall, therefore, speak of a few of what I deem its mistaken directions and misconceptions as to its nature and execution.

I first wish to call attention to the often-made assertion that the operation is easy. Those who select only simple cases or are satisfied to leave a large part of the deflection untouched, thinking that enough has been done when a piece of cartilage, and possibly

a fragment or two of bone, have been removed, can do what they regard as the operation quickly and easily. The thorough submucons resection, including frequently the ablation of the deflected submaxillary crest and vomer, demanded by most cases if the nostril is to be perfectly freed, is another task, and a hard one for a novice, for whom, if conscientious, and until he has learned by experience, his first operations may prove long and exhausting, and largely because he is not used to recognising the changed appearance of the parts after the resection is under way. To such beginners I have often had to point out the location of the crista and other parts.

In certain methods much is made of the speed with which the operation is accomplished, as if it were necessary to complete it in haste. The spirit of the method is that of patient, painstaking deftness, not of hurry. As the patient does not suffer there is no reason why the surgeon should stint his time. As elsewhere, here also hasty work means rough and incomplete work and increased trauma.

Critics of the method often refer to it as painful. I think that much depends on the method of local anæsthesia whether the patient suffers or not, and I still employ pure cocaine for the purpose, rubbing it in the form of flake crystals into the mucosa with a little moist swab, always preceding it with 1 to 1000 adrenalin. The amount of cocaine absorbed is no more or even less than where solutions are used, and the concentration of the drug produces a local insensibility so great that even children of seven and nine years have submitted to the operation, including the resection of the bone, without complaint. The loss of feeling is also rapid, being complete in five minutes.

Of late purely theoretical objections have been raised against operating upon children before the fifteenth year, the reason given being that the septum takes an important part in the development of the adult nose, one author—seemingly having in mind the removal of the entire septum as the essence of the submucons resection—saying that “the septum should not be removed during the years of active growth.” Properly done, the submucons resection never removes more than the deflected portion of the septum, and only in extreme cases does this equal one third of the area of the entire septum. The important upper anterior part of the cartilage under the triangular cartilages of the external nose is always spared, and there is therefore always a large enough frame left about the window made to maintain the form of the septum in

its growth. During five years in which I have resected the deflections of thirty-two children between the ages of seven and fifteen, and of twelve between the ages of seven and eleven, I have seen no damage to the development of the children's noses. The parents would not have been slow to tell of any, and such of the children as I have seen long after the operation have shown, instead of nasal deformity, an improved physiognomy and appearance of health due to the free nasal breathing established. An undesirable effect of growth noticed in some younger children was a tendency to a partial reproduction of the deflection, but never to any sinking of the nasal bridge. I have also found, although it has lately been asserted that the cartilage is not reproduced, that the septa of such children as I examined in this respect grew firm over the site of the window in the cartilage in a few weeks, and I attributed this to the great regenerative power of childhood, and to the careful saving of the perichondrium possible with my method of operating, which permits free and minute inspection of the entire operative field. The perichondrium is easily left upon and removed with the cartilage if not looked for.¹ Nearly all my deviations in children were extreme, wholly blocked one nostril, and, if sigmoid, both, and injured the patients' health enough to absolutely demand resection. Children should, therefore, not be deprived of the benefits of the operation because of theoretical objections inspired by a timid imagination.

I have not changed my reversed L and long vertical initial mucous membrane incisions, which give widest access to the difficult deeper parts of the deflection and are described in my later writings on the subject, in which my method of operating is given in detail.² I repeat that the anterior buttonhole cut of the Killian type made in front of the deviation is inadequate for deflections which are largely bony, which have strong angles, or where the denudation is difficult. To overcome the disadvantages of the buttonhole cut the long speculum is used to hold away the mucosa on either side of the cartilage and bone resected between its blades. However plausible on paper, in practice this speculum is much in the way of instruments and is not needed, for it is not necessary to hold aside the mucosa of the concave side, because, when separated, it hangs away out of the reach of forceps of its own accord, and all that is required is a flat retractor to hold the mucosa of the

¹ *Annals of Otology*, pp. 218, 219, 1905.

² *Annals of Otol., Rhinol., and Laryngol.*, June, 1905; *Journ. of Amer. Med. Assoc.*, September 30, 1905; *Fränkel's Archiv f. Laryngol.*, 1906, p. 152.

convexity out of the way in some cases. For this purpose I now use a retractor like those of my set for holding the nose open, but with a blade an inch and a half instead of three quarters of an inch long. A great advantage of my reversed L mucous membrane incision is the fact that the anterior flap so formed, when reflected, uncovers a large area of cartilage. This much facilitates the making of the first incision through the latter, as the cut is made through the denuded cartilage in plain sight, and not, as is the case where the mucous membrane incision and cartilaginous incision coincide, through cartilage hidden underneath mucous membrane, in the latter case the severing of the cartilage being done in the dark. This forms an objection which has made this portion of the resection difficult for many, and has led to crude methods of scratching and scraping a small hole through the cartilage with curettes and other half-sharp implements instead of making a well-directed ample cut with a keen knife blade, outlining a large cartilaginous flap, as is my practice.

The need of a thin-bladed sharp elevator and of other round-edged knife blades for dissection still does not seem to be appreciated by many. In those regions where the mucosa-perichondrium and periosteum are grown on to the underlying cartilage or bone, the keen blade dissects up the septal covering with ease, while a chisel-edged or blunt elevator would require forcible work in such places, leading to the possible plunging through of the instrument into the opposite nostril, and to subsequent inflammation of the bruised and stretched mucous membrane. To make a complete operation I nearly always find it necessary to use the sharp blade to uplift the covering from the septum at some part; indeed, I often literally dissect the bony base of the septum out of its envelope of mucosa periosteum, and I find that too much preference given to dull elevators does injury and makes the operation tedious, while the judicious use of the keen edge advances it rapidly and safely.

I still cut out the denuded cartilage with my three little cartilage knives, and have never felt the need of the swivel knife. The large perforations reported as due to its use are an evidence of its uncontrollability, and could not have occurred had my knives been used. Their fixed blades can be more accurately guided than a swinging swivel one, and cut in plain sight. After removing the main piece of cartilage the angular knives pare off remains of the cartilaginous deviation, if there be any, in the manner of a carver's tool. If desired, they readily exsect the

deviated cartilage in one piece ; but this, the main purpose of the swivel knife, is not an important one—in fact, to insist on denuding all of the cartilaginous deviation before removing it often retards the operation, the bared portion being in the way of sight, and, especially where the covering is adherent, making the denudation difficult and favouring perforations, while a piecemeal removal of the cartilage gives better and better access to the deeper parts with each fragment that is taken away.

There is much difference of opinion as to the best manner of removing the superior maxillary crest (*crista incisivæ*) when it impedes respiration. It should always be taken away when it is at all in the way, for after the resection of the cartilage it supports nothing, and what seems a moderate obstruction becomes a formidable one when the shrinkage of the soft parts due to adrenalin has passed off. The chisel still has most followers in spite of its rather uncertain performances. To show how much difficulty the resection of the septal ridge has caused some surgeons, I refer here to a recent writer, who, evidently at his wits' end, has even suggested the fracturing of the incisor crest and vomer from the floor of the nose with crushing forceps applied outside of their mucous coverings, claiming that the act denudes the bone and removes it at the same time ! The poverty of resources of a method that includes such acts of violence is evident. As I have never had any difficulty in cleanly and painlessly cutting away the *crista* with my forceps, I allow myself here to briefly describe my present method for resecting the septal ridge.

After the cartilaginous deflection and the frequently present long strip of cartilage grown on to the side of the *crista* and vomer described by Killian are removed, the operation may seem done, as the *crista*, commonly hidden in its own envelope of periosteum, may escape observation. The narrowness of the inferior meatus on the convex side and the persistence of the horizontal angle of the concavity on the other, suggest, however, the presence of a bent-over superior maxillary crest, and its existence is assured by the resistance of the hidden bone felt with a probe below the bagging mucosa of the concavity. With a round-edged knife a cut is then made down to the bone along the upper edge of the crest thus disclosed to the touch. The periosteum is scraped aside and the blade of a knife of my set called "A," bent at an angle on its edge, is pushed down the side of the crest that looks towards the concavity to the floor of the nose, the flat of the blade hugging the bone and severing the mucosa-periosteum from it. The knife is

then drawn backwards and forwards close to the side of the crista and until on the concave side it is denuded to the nasal floor of its covering and the latter falls away from it. A perforation, so easily made in this region, is thus avoided. The convex side of the ridge is next bared and the crista is then seen to stand up naked and ready to be cut away with the forceps, the blades of the latter being crowded over the bone from above down to the floor of the nose and cutting it away piece by piece.

In many cases, especially after the resection of extensive osseocartilaginous deviations, there is obstruction for a period after the operation of the naris which was roomiest before it, the naris of the concavity. The obstacle to breathing is due partly to temporary sympathetic intumescence of the turbinals, but also to the swelling of the redundant mucous membrane which formed the covering of the resected deflection. This temporarily broadens the septum, sometimes very much, and the loose mucosa usually bags into the naris of the former concavity. The patient is apt to fear that the previously roomy nostril will remain permanently blocked, but he may receive positive assurance that in a few weeks both nares will be ideally clear, for the septum in time invariably becomes thin and lies in the median line.

In conclusion, I wish to call attention to a species of superficial inflammation with epithelial desquamation and consequent prolonged scabbing occasionally seen in the naris of the former convexity, and especially apt to occur in adult patients who have been subjected to previous sawing or fracturing operations, the post-operative cicatrices making it difficult to preserve the mucosa of the convexity so that its vitality becomes injured. In these cases I have the patient keep the operated side closed with a cotton pledget for some weeks to prevent scabbing, and have him cleanse his nose with a mild alkaline spray. When he begins to use his nostril for breathing he is directed to anoint its interior with lanolin, with 2 per cent. salicylic acid, to prevent the clinging of crusts. In some weeks these patients recover, and all scabbing ceases.

DISCUSSION.

Dr. WILLIAM L. BALLENGER (Chicago) said the objects of the sub-mucous resection were to re-establish normal respiration, and to allow of aeration and drainage of all the nasal meatus and accessory cavities. In about 90 per cent. of the cases of deflected septum this method best overcame the obstruction and with least shock and waste of time. He had adopted the general features of the Killian or continental procedure.

The chief modification introduced by him was the swivel knife for the removal of the cartilaginous portion of the deviation. In selected cases he had fractured the ridge or crest of the vomer by means of Adams' forceps. Dr. Freer was wrong in stating that the swivel knife was often the cause of large perforations. The instrument had been largely adopted in Germany, England, and the United States, and seemed to meet a universal need.

Dr. HERBERT TILLEY (London) said that from an experience of over eighty cases of submucous resection he had become convinced that the thorough removal of the incisor crest was a most important part of the operation. As a matter of routine, he removed the anterior half of the inferior turbinate on the side opposite to the deviation. This body was nearly always enlarged, and if not removed it formed an obstruction when the septum was placed in the middle line. He preferred Ballenger's swivel-knife to any other instrument for the removal of the denuded cartilage. In children if the symptoms of obstruction were not urgent, he delayed operation until about puberty. It was advisable to use one long, sterilised strip for packing, instead of several smaller pieces. With practice the operation could be carried out in the most difficult cases in from fifteen to twenty minutes. He had used local anæsthesia by the submucous injection of eucaine and adrenalin chloride in a few cases, and in others by the superficial application of equal parts of adrenalin chloride and cocaine solution (10 per cent.), but in the majority of cases he preferred a general anæsthetic.

Dr. CHEVALIER JACKSON (Pittsburg, Pa.) thought that submucous resection was so satisfactory that one was tempted to do it when an operation other than septal was required. Patients did not come for the correction of deformity (except, perhaps, external deformity, which in his experience was not got rid of by this operation), but usually for the relief of symptoms due directly or indirectly to stenosis. He had been pleased at the attention given that day to the turbinals. Some ten years ago he had called attention to the turbinals as a factor in the failure of operation for the correction of septal deviations, and in the causation, not only of the stenosis, but of the deformity itself. He thought that the day of pottering at a nose in an office was past, and that intra-nasal surgery should be carried out in an operating-room.

Dr. HENRY SMURTHWAITE (Newcastle-on-Tyne) stated that he had employed local anæsthesia from the first and that this could be absolute. He applied cocaine 10 per cent. and adrenalin to the nose for half an hour, followed by the injection of beta-eucaine 2 per cent. The patient was seated upright in a chair and could immediately be lowered into the horizontal position on showing signs of faintness. In all his cases he had made the horizontal and vertical incisions, reflected the mucoperichondrium and held it back with a pad of wool so that one could clearly see the obstruction to be removed. He always used stitches.

Dr. J. PRICE-BROWN (Toronto) believed it would be unfortunate if Dr. Freer's sweeping statement that submucous resection was the best method of treatment for all cases of septal deviation received unqualified endorsement. This operation was undoubtedly the best when there was much thickening as well as deformity, but it seemed to him that simpler methods would suffice when there was merely curvature of the cartilaginous septum. He recommended two parallel incisions to be made from before backwards over the convex side about half an inch apart, with a cross-cut connecting. All the incisions should penetrate both mucous

membranes and be made obliquely. The parts could then be pressed into the median position, the cut edges gliding on one another, and retained in position by means of a rubber splint until healing had taken place.

Dr. M. C. SMITH (Lynn, Mass.) spoke from the dentist's standpoint. He thought that if the dentist fulfilled his duty to young patients there would be little need of surgical operation on the septum in later life. In children under fifteen years of age with a deviated septum and enlarged inferior turbinates a deformity of the mouth was nearly always found. The arch was narrow and V-shaped, the vault high, and the first molars were not more than an inch apart, and might come entirely within the arch of the lower jaw. Such patients should be sent to the dentist and the arch of the upper jaw widened, not by simply tilting the teeth outwards, but by a plate made of vulcanised rubber that would come down over the outer edges of the teeth so as to hold them in their upright position. Pressure should then be applied over the mucous membrane as high as possible above the gingival margin, and the alveolar process forced out bodily, so that most widening took place in the median line. Now, if the jaw were widened half an inch it would be reasonable to suppose that the anterior part of each nasal cavity would be a quarter of an inch wider, and if the inferior turbinates were drawn an eighth of an inch away from the septum space enough for breathing would be obtained unless a grave condition existed. By means of work done in the mouth it was easy to separate the inferior turbinates an eighth of an inch from the septum and to draw down the septum materially.

Dr. J. A. STUCKY (Lexington, Ky.) feared that the enthusiasm for this operation was carrying them away. Sufficient time had not elapsed to prove the safety of removing so much of the septum. In the majority of cases deviation of the septum of the middle turbinate interfered with the ventilation of the upper part of the nose and drainage of the sinuses, and the removal of its anterior third gave relief. The use of crystals of cocaine and of the 20 per cent. solution would be dangerous in the South. For three years he had obtained the best effects as regards anæsthesia and hæmostasis with the following combination: \mathcal{R} —Sodium chloride 5 gr., cocaine hydrochloride 20 gr., antipyrin 20 gr., solution of adrenalin (1 in 1000) 2 drms., water to 6 oz. M.

Dr. H. P. MOSHER (Boston) found that the operation took so long that it could not be used as a routine method in a large hospital clinic. In private practice it was applicable in 90 per cent. of the cases, and was the method of choice. For rapid and hospital work he expected to still use the older Gleason operation carried out by means of a horizontal and a posterior vertical incision, the fracturing of the tip of the vomer, and the buttoning over of the flap. It was important to be ready to make a flap and to abandon the button-hole incision at any moment. Cargill membrane was even better than rubber tissue for preventing adhesions, and had the advantage of helping the regeneration of the epithelium.

Dr. WENDELL C. PHILLIPS (New York) had for some years examined the septum in elderly people, especially those having no history of nasal catarrh, sinus disease or ear affection, and had been surprised to find how often a marked deflection or spur was present. He therefore maintained that their guide in deciding as to operation should be symptoms, and that an operation should never be performed unless these demanded it. The shock, depression, and suffering after the operation called for careful surgical measures in a hospital where the patient should remain for at least

twenty-four hours. Two other operations were quite feasible, and were to be preferred in hospital cases when time was a consideration. He regarded Roe's forceps as a most useful instrument. He believed the submucous operation to be the most applicable in the average case. The incisions should vary according to the requirements. The cartilage should be removed with Ballenger's knife.

Dr. C. G. COAKLEY (New York) had seen in children with high and narrow palatal arches and septal deformities very beneficial results follow the use of dental splints which affected a widening of the arch. There was undoubtedly a straightening of the deflected septum and an increased patency of the nasal respiratory passages. Sufficient had not been said that day as to packing the nose in such a way as to keep the septum in the median line. Too much packing on one side resulted in a continued deviation, while too little was likely to be followed by the development of a hematoma between the layers posteriorly, and when this had been organised a marked bulging was found.

Dr. W. E. CASSELBERRY (Chicago) assigned all credit to his townsman, Dr. Freer, as the originator in America of submucous resection of the nasal septum, because he had worked independently, and his publication antedated any description of the operation by their distinguished colleague in Freiburg. The speaker had operated in the past with permanently good results by the methods of Asch, Watson-Gleason, and Roe, and felt that the brusque terms of condemnation applied to them were undeserved. Still, in recent years he had substituted the Freer and Ballenger procedures with even greater satisfaction in most, but not in all, cases. Dr. Freer idealised his operation in alleging its universal applicability, but the speaker could cite offhand at least two conditions in which it was obviously not to be preferred: First, in septal deflection with external lateral deformity, the fracturing operations could be so made on the septum alone that in straightening it the external deformity was acceptably diminished; secondly, in young children the Watson-Gleason method was quite adequate, could be made in a few minutes under general anæsthesia, and left intact the framework of a developing feature. To avoid the intolerable delay of the fragmental dissection of bone from far back he adopted the following expedient in suitable cases: Having made the conventional submucous resection of the cartilage, maxillary crest, and vomer anteriorly, and having raised the muco-perichondrium of the bony concavity backward quite to its rear limit, he sawed off the projecting bony convexity. No perforation resulted, the muco-perichondrium of the concavity having been preserved, while the sacrifice of the fragment of mucosa so far back on the convex side was harmless.

Dr. PATRICK WATSON WILLIAMS (Bristol) thought there was too great a tendency to resort to so enticing and excellent an operation as that developed by Killian and Freer. The guide as to the necessity for interference should be the presence, not of septal and other deformities, but of symptoms demanding relief. Not very rarely there might be fairly free passages for air in the lower part of the nose, and yet owing to obstruction in the upper or physiological respiratory tract the subjective sense of nasal obstruction was marked, and attended by a certain degree of nervous or mental depression. The best method of removing the obstruction had also to be determined. Formerly the turbinates were treated rather than that resort should be had to the severe methods that preceded the introduction of submucous resection. This was the pro-

cedure to be almost invariably adopted in operating on the septum, yet there were cases that could be rectified by partial removal of the inferior or middle turbinal or by the limited submucous sawing of a ridge. To avoid perforation while cutting through the cartilage he had found it advantageous to make a small primary puncture on the concave side well forward which would allow the passage of a long narrow muco-periosteal elevator. By means of this instrument the cartilage was bared where later it would be incised from the convex side. The swivel knife was of great service in shortening the operation, but there was danger of its breaking if the bony septum were attacked. He was nervous about doing septal resections in very young children, but in a limited experience of such cases he had only had good results after three or four years' subsequent observation.

The PRESIDENT considered the outcome of the discussion to be to the effect that there was room for judicious eclecticism in the choice of operation. The technique described by Dr. StClair Thomson was that published in detail by Killian, and was the form of submucous resection practised by himself and his colleagues. He (the President) departed from it in cases of deflection with a sharp vertical ridge, when he preferred Dr. Freer's reversed L incision as permitting of the detachment of the muco-perichondrium behind the ridge, with less risk of perforation. He then referred to a few special difficulties which he had encountered. Adhesions from previous operations were difficult, but not impossible to overcome. This was an argument in favour of making a complete resection at first. Extreme horizontal position of the upper portion of the deflected septum had given him trouble. He showed how the upper part tended to spring upwards and outwards out of sight when the middle part was divided. When this occurred he had usually to employ a small knife on a stem, as Dr. Ballenger's admirable swivel knife, which he used habitually for the removal of the bulk of the cartilage, was apt to miss it. In such cases it was necessary to exercise great discretion so as to avoid removing too little and thereby keeping the soft septum so far to the convex side as to renew the obstruction, and on the other hand, removing too much so as to take away the support of the anterior part of the nose. He made it a rule to operate on the convex side, but when there was a dislocation of the triangular cartilage into one nostril he operated on this side, making the incision along the prominent edge of the cartilage. Also, when there was a very extreme enlargement of the maxillary crest he sometimes selected this side, and extended his incision across the floor of the nose so as to detach the muco-periosteum from below upwards instead of from above downwards.

REPLIES.

Dr. STCLAIR THOMSON, in reply, congratulated himself on having been allowed to inaugurate such a highly interesting discussion. If he expressed any self-satisfaction with his own contribution, it was because the points he had purposely omitted were just those which had been so well filled up during the debate. He had intentionally said nothing as to the indications for treatment, but fully agreed with what had been stated chiefly by Drs. Wendell Phillips and Watson Williams. It was remarkable how one happened across patients with marked deviation, and yet no important symptoms could be attributed to the condition. As to shock, it was always well to keep the patient in bed, and in England one never

operated on private patients in the office. As to technique, he preferred his long Thudichum to a Killian, and used two thin-bladed elevators and a Killian chisel and hammer. The necessity of removing the maxillary crest had been well emphasised by Freer. For anæsthesia cocaine was enough, but chloroform was quite satisfactory. Perforations were, of course, unknown as practice became perfect. The history of the operation had been touched upon. As Dr. Dundas Grant mentioned, the first case of submucous resection shown in London was his (Dr. StClair Thomson's). Dr. Tilley was in error in attributing this to Mr. Hunter Tod, who showed a Krieg-Boenninghaus case, a very different method, which removed entirely all the mucosa on one side and left a scabby and slowly healing area. In Europe they were chiefly indebted to Killian for perfecting the operation. The British rhinologists were very grateful to their American *confrères* for perfecting and popularising the method. His own outfit had been reduced to six or eight tools, but these always included Freer's elevators and Ballenger's swivel-knife.

Dr. OTTO T. FREER, in reply, said that reference had been made to Killian as the originator of the submucous resection. Although Killian began operating before the speaker, the first detailed description by Killian that led others to follow him appeared in *Fränkel's Archiv* after the publication of his (Dr. Freer's) two first articles on the submucous resection. These had been printed in March, 1902 and 1903, in the *Journal of the American Medical Association*, and had induced a number of American rhinologists to follow his plan of operation. The credit of having first announced the essential principle of the method—the resection of the deflected cartilage and bone—belonged to Krieg, of Stuttgart. A number of cases in which large perforations followed the use of the swivel-knife had come to his knowledge. The hinged blade of the instrument could not be as surely guided as a fixed one, and was more apt to take its own way, so that the few minutes saved by its use were won at the expense of accuracy. The number of instruments in his set had often been criticised. Of all those displayed, not more than eight or ten were used in the average operation. The rest were reserved to meet the difficulties of unusual deflections, and without their aid he would have made perforations and incomplete operations in a number of cases. The cutting away of the superior maxillary crests with his forceps he did not find difficult. The patient sat before him while he stood and crowded the blades of the forceps downwards, straddling the ridge while they cut through it. He had never seen shock after his submucous resections. He repeated that he found the operation well suited to children, and with his instruments and method it was nearly as easy to operate upon them as upon adults. The minuteness of the operative field made very near vision imperative, and he advised presbyopic operators to use strong glasses. The lateral twist to the nose observed in many deflections he had often seen partly or wholly corrected by the submucous resection. Dr. Ballenger, he was sure, would have but few followers to his advice to break off the superior maxillary crest with forceps. Neither did he think that many would be induced to conduct the resection from the side of the concavity, as most operators who undertook this found that it added greatly to the difficulties of the operation. He regarded the Ballenger-Foster forceps shown by him as too large for use in most nostrils. In reply to the objection to the use of keen-edged elevators, he repeated that, far from creating perforations, they lessened their frequency and diminished the traumatism of the operation. The criticism of the fitness

of his instruments was best refuted by their large and increasing sale, not only in America, but in Europe, a proof that they were satisfactory to many operators. In respect to the adherence in places of the periosteum and perichondrium, he looked up the records of thirty-six consecutive cases in his total of 178, and found that in thirty-three of these he needed sharp dissection to complete the denudation. It was impossible to cut any but the thinnest bone in the septum with a knife. He had never seen sinking of the nasal bridge following upon any of his operations. He had had great difficulty in having things which experience had taught him to be true generally accepted, notably the fitness of his mucous membrane incisions, which were only now beginning to be more widely employed. He felt sure that other recommendations which usage had led him to advocate as proper would in time win their way as operators experienced their value. He waited with confidence for time to declare what should be standard, knowing that it would discard what was popular for the moment, and establish what had merit but did not at first win favour.

THYROTOMY AND LARYNGECTOMY FOR MALIGNANT DISEASE OF THE LARYNX.

BY CHEVALIER JACKSON, M.D.,
Pittsburg, Pennsylvania.

It is not my intention to write an essay on malignant disease of the larynx. Only two phases of this broad subject will be considered, namely, the operations of thyrotomy and of laryngectomy. In addition, a few words will be said in regard to pre-operative microscopy.

It is hoped that the writer's omission of reference to the work of others will not be deemed egotistical. The opinions of, and results obtained by, the world's workers in this field—laryngeal malignancy—are so well known to you that it would be but a waste of time to review the literature. Instead, only the results of the writer's own work will be given.

THYROTOMY.

For malignant disease of the larynx I have done 15 thyrotomies, of which 3, though including portions of the cartilage, may be classed as thyrotomies.

Age.—The age varied from thirty-three to eighty-one years.

Sex.—All of the 15 cases were males.

Site.—Left ventricle, 3; right ventricle, 2; left ventricular

band, 1; right band and ventricle, 1; left cord, 1; left cord and ventricle, 1; right cord, 3; both cords (anterior commissure), 1; interarytenoid fold, 1; aryepiglottic fold, 1.

Pathology.—All the growths were small in size, the largest not much exceeding a cubic centimetre and the smallest rather smaller than a pea. Histologically, 12 were squamous-celled epitheliomata, 1 was scirrhus, 1 glandular-celled carcinoma, 1 sarcoma.

Recurrence.—Of 15 thyrotomies for malignant disease done by me, 1 is too recent (three months) for record. Of the remaining 14, 1 was alive and well at the end of six years, 1 at the end of four years, 2 were alive and well at the end of three years, 1 at the end of two years. Two died of general diseases after one year, 4 were lost trace of at the end of about one year, and 3 died of local recurrence, in spite of subsequent laryngectomy. Omitting the recent case, there were 14 thyrotomies, with 11 (78 per cent.) well at the end of one year, at which period the writer thinks the term "relative cure" may be applied.

Two of the recurrences were in cases which were unsuitable to thyrotomy, being extrinsic, and total laryngectomy should have been the operation. For this mistaken judgment I have only myself to blame.

Unfortunately, there is no certainty that recurrence may not appear later than one year, and, in the poorer classes, escape observation until too late. But in the better classes there seems no reason why, by occasional observation, a recurrence should not be discovered sufficiently early to enable an equally satisfactory second thyrotomy. The other recurrence was after the removal of all the soft parts from the left half of the larynx for a squamous-celled epithelioma about the size of a pea. I never had a case more promising of cure, as the growth was so small and the removal so wide; yet recurrence in the scar occurred inside of two months, for which I did a second thyrotomy, removing half the larynx. Upon a second recurrence one month later I removed the entire larynx but without avail, as the lymph-nodes on both sides of the neck began to enlarge, and the patient died at the end of six months from the first thyrotomy. My only explanation of the utter failure of thyrotomy in this case is that the growth was of an unusually malignant type, or that the patient was unusually vulnerable. There are certainly degrees of malignancy or degrees of vulnerability, or both.

Voice.—The ultimate vocal results in 11 cases could be classed as fairly good. In the two cases thyrotomised through errors of

judgment recurrence followed so soon that nothing but a loud rasping whisper was obtained. In the other case of recurrence there was no time for anything above a whisper to be cultivated. In the recent case the voice is already strong, though very rough, at the end of three months. In some of the cases the voice was high in pitch, in one case a full octave higher. In this case all of the left cord and the anterior portion of the right cord was removed. When healed there was a short cicatricial band attached to the short remainder of the cord, the shortness probably accounting in part for the high pitch.

LARYNGECTOMY.

There is no question in the writer's mind that thyrotomy is the operation of election for early intrinsic malignant disease of the larynx. But what about the later cases, those extrinsic by origin or extension? Are we to let them die unrelieved except by palliative tracheotomy, and without hope? In many instances, yes; in others, no.

Out of 29 cases of extrinsic malignant disease of the larynx I advised palliative tracheotomy and its hopeless outlook in 21. In 8 I advised and performed total laryngectomy. These 8 were in good physical condition. Though 2 of them had slightly palpable arteries, they were otherwise organically sound, save for their laryngeal neoplasm.

To laryngectomise a patient frail, emaciated, cachectic with primary or metastatic malignancy elsewhere, or with organic disease, or one worn out in his fight for air, is to court disaster.

If he have vitality enough to react from his chronic carbonic acid poisoning and he be otherwise sound, a preliminary tracheotomy may fit him for operation in a few weeks. This matter of the general condition of the patient is of more importance than the extent of the disease, as shown in two of my cases in whom I removed, besides the larynx, large masses of infiltrated glands, muscles, nerves, and arteries, including in one case the external, internal, and common carotid, the pneumogastric nerve of one side and a portion of the œsophagus, pharynx, and tongue. The patient has to withstand, besides the shock, the five days' starvation that the writer deems essential.

In many cases, unfortunately, when we see them, it becomes a question, not of which operation is the better, but of whether any operation at all is admissible.

Mortality.—Eight consecutive cases of total laryngectomy without mortality within thirty days after the operation seems a rather unusual series. I know that the mortality of so serious an operation cannot be *nil*. I expect fatalities in the future, and it is only by reason of the small number of cases in the series that none has happened.

Age.—The age ranged from fifty-two to seventy-five.

Sex.—All (eight) were males.

All of the cases of malignant diseases of the larynx that I have operated upon have been men. Of the 49 cases of this disease, of which I have records, 4 have been in women. They were among those upon whom I declined to operate.

Pathology.—Of the 8 cases, 6 were epitheliomata, 1 was columnar-celled carcinoma, and 1 of mixed type, endothelial sarcoma (Wright). The histological examinations after extirpation in these and in the thyrotomised cases were made either by Dr. Jonathan Wright, Dr. Ralph Duffy, or Dr. Joseph H. Baruch.

Site.—Aryepiglottic fold, 1; aryepiglottic fold, epiglottis, and arytenoid, 1; interarytenoid fold and posterior surface of the cricoid, 1; right half of larynx, 2; left half of larynx, 2; posterior half of larynx, 1. In these last-mentioned 5 the infiltration and deformity were so great that the exact point of origin could not be determined. In 3 cases the infiltrated tributary lymphatics were removed. In 1 case an immense mass of glands was removed, and in another case, in addition to the glands, the infiltrated external, internal, and a portion of the common carotid arteries, a portion of the jugular vein and of the pneumogastric nerve were resected. In 3 cases the œsophagus was involved, one of them to the extent of nearly two inches of the exterior wall.

Complications.—Of 8 total laryngectomies, 1 was followed by pneumonia, 1 by bronchitis, 1 by cellulitis, and 1 by persistent vomiting, from all of which they recovered. Only two had complete primary union throughout the pharyngeal closure without leakage, the others having more or less leakage into the wound—in most instances at only one small point, requiring a tampon to prevent it; but as in all the trachea had been stitched to the skin this leakage did not reach the air-passages.

After healing, 2 cases were troubled with superficial ulcerations of the tracheal mucosa, which would heal and reappear, and 1 case developed a chronic tracheitis. These conditions were deep down in the trachea, and were only visible upon tracheoscopy with bronchoscopic tubes, and did not occasion serious discomfort.

The ulcers readily healed under applications through the tracheoscope of argentic nitrate.

Voice.—In all of my laryngeotomised cases that lived more than one year a buccal voice developed that could be understood by those constantly associated with the patient. Strangers could not catch certain words. Much depends on the practice and effort exerted by the patient to develop a buccal voice. From observation in my cases I am firmly convinced that any patient who will work at it can develop a good buccal voice that will be intelligible to any one. Unfortunately, at the time of life when we usually see malignant disease systematic effort in new lines is irksome.

In one case two inches of the anterior wall of the œsophagus had to be resected. This rendered the restoration of the œsophagus at the primary operation impossible, and the lateral edges of the œsophagus and pharynx were stitched to the skin, while the upper edge of the resected anterior wall was drawn upward and forward as far as possible toward the tracheal orifice. I planned a plastic closure of the gap, but it gradually closed itself to a small aperture that could be obturated. No troublesome degree of stricture of the œsophageal lumen developed. The patient could talk in a loud whisper with the assistance of a rubber cup (colostomy pad) placed tightly over the two apertures in such a way as to allow the air to pass out from the tracheal orifice over the intervening bridge of tissue into the pharyngeal orifice.

Recurrence.—Of the 8 total laryngeotomies done by me, 3 were hemilaryngeotomies followed by recurrence and the total operation. (Three other hemilaryngeotomies without recurrence were included under "thyrotomy.") Of the 8 laryngeotomies, one had lived seven years. I felt justified in claiming a cure, but upon inquiry a few weeks ago I was informed by relatives that he died of "cancer of the stomach." Details are as yet unattainable, but from the lay statements I do not doubt the diagnosis. One case lived three years without recurrence, dying of cerebral hæmorrhage, and one eight months, dying of alcoholism. Of the remaining 5, 3 recurred within a year, one apparent cure was lost to observation after a year, and one is too recent to record; one of the 3 prompt recurrences had metastases in the lungs, liver, and pancreas. Thus, of 8 laryngeotomies no absolute ultimate cures can be claimed, though 3 were apparent cures at the end of one year.

In view of the case of "recurrence" after seven years it cannot be said that cancer is ever cured in the sense that some would

apply the term. Recurrences have been reported after thirteen years. Without going into the matter of the period after which the word "cure" should be applied, in my opinion, for the purpose of considering the relative efficiency of different methods of operation, freedom from recurrence for one year indicates adequate removal. There is no such thing as absolute cure of malignancy. Recurrences after one year, in my opinion, indicate a vulnerable soil rather than a repullulation of the primary process. This has nothing to do with operative efficiency. You cannot cure vulnerability by operation. If you have no recurrence within a year you have removed the malignant process. If it recurs thereafter, it is because you have failed to do the impossible—remove the vulnerability of the soil.

Palliative tracheotomy.—Of 21 cases of malignant disease of the larynx in which only a palliative tracheotomy was done, 9 were followed to termination. Of the 9, none lived more than thirteen months.

Comparing this duration of life with the laryngectomised cases, the latter show much better results, but they were selected for their excellent general health, and with two exceptions had a limited extent of disease, while the tracheotomies were in most instances considered unfit for radical operation.

Mortality after radical laryngeal operations.—Of 15 consecutive thyrotomies done by me for malignancy, not one died within thirty days of the operation, hence the operative mortality was *nil*.

Of 8 consecutive laryngectomies, the operative mortality was likewise *nil*. As before stated, the writer is aware that a larger series of cases will show a considerable mortality, and no claim is made that these operations are without risk.

Four things have contributed to the high mortality of radical laryngeal operations in the past, namely the bad state of health of the patient, shock, sepsis, and pneumonia.

These were minimised in the cases herewith reported by adherence to certain rules. No case was operated upon that was not in reasonably perfect general health. Of course, senile changes and slight arteriosclerosis were not considered a bar, but no case with chronic bronchitis, nephritis, or other organic disease was reported upon.

This selection of the case as to general condition stands next in importance to selection of the case as to extent and site of the growth—that is, whether intrinsic or not. Doubtless, by advising against operation, some cases have died that might have been

saved, at least for a time, but it has been, and still is, my opinion that the patient with malignant disease of the larynx *plus* organic disease or frail general health will last longer if not operated upon radically.

Shock, sepsis, and pneumonia were minimised by the technique hereinafter detailed.

. . . In the minimisation of shock, besides the general precautions that apply to all surgical work, there are some special precautions to be taken, as alluded to under "technique."

Dr. John W. Boyce, whose aid in detecting and forestalling the causes of shock has many times served me and my patients well, took a number of sphygmomanometric readings during some of my operative work. The following report from him, in my opinion, is of great value as indicating one reason for the great difference in the amount of shock from laryngectomy and from thyrotomy, and as pointing a lesson in the lessening of operative shock:

"In regard to your last thyrotomy (for epithelioma of the larynx) in which I took sphygmomanometric readings, they never fell below what I take to be the patient's ordinary tension. He was at no time deeply anaesthetised, and frequently struggled. The high readings I attribute rather to muscular effort than to operative irritation.

"In regard to the two laryngectomies of yours in which I took sphygmomanometric readings, I may say that the most interesting feature of the blood-pressure chart in the case of Mr. P—— was the fall that occurred when the larynx was turned upward. A subsequent fall occurred when the upper end of the œsophagus was drawn on just previous to incising it. In the subsequent case of laryngectomy, Mr. M——, the blood-pressure was seen to fall steadily as long as the œsophagus was being manipulated. In this latter case the fall went almost to the danger point I had fixed on in my mind as the one at which the operation should be stopped. This fall of pressure is so remarkable, and so out of proportion to the apparent severity of the operation, that it suggests the theory that the depressor nerve mechanism of the human heart runs in the substance of the œsophagus. If so, it might account, not only for death on the table, said to occur in these operations, but also, by the profound prostration induced, for some of the inhalation pneumonias that are reported as following. Whether other observations shall confirm this theory or not, the practical effect indicates most extreme caution in

making traction on the œsophagus, and that incisions into it should be made with the part as nearly as possible in its natural position."

Sepsis and pneumonia can be prevented in most cases by observing the technique, as well as pre-operative and post-operative care, outlined below, and should they supervene, as happened in four of the writer's cases, the chances for recovery are good if the patient be of perfect general health. Herein lies in great measure the reason for the writer's good results. Had he operated upon all cases that locally justified it the death-rate would have been considerable. Only 15 cases were operated out of 23 that locally justified thyrotomy, and only 8 out of 29 that might have been laryngectomised, a total of 23 out of 52 cases of malignant laryngeal disease (really only 49 cases, as 3 underwent both operations).

The writer hopes he will not be misunderstood. He begs to repeat that he does not claim that the operative mortality of either thyrotomy or laryngectomy is *nil*. On the contrary, he expects his next series of cases (of laryngectomy at least) to show a considerable mortality, the absence of which in his present series simply means that it contains too few cases. Nevertheless, he feels absolutely certain that if every case of laryngeal disease that is encountered be operated upon radically, even in the latest stages, as general routine surgery, and if the post-operative care be entrusted to the routine surgical nursing, the mortality of thyrotomy cannot be kept under 35 per cent. nor that of laryngectomy under 50 per cent. Every breath of air, every detail, every person from the surgeon himself to the cook and the housemaid, must be under the most rigid discipline to insure reasonable success. To show what trifles may make mortality think of imperfectly sterilised milk leaking into the wound, and follow mentally that milk back through its unclean handling all the way to the filthy hands of the milker in the foul stable where are housed the excrement-bedaubed cows that shed hair and exfoliated epidermis into the milk-pail. Think of the leaking into the wound of a raw egg, which when broken has run over the porous shell, which has been its covering when it escaped from the fowl's vent, which is also the fowl's excrement passage, to say nothing of what that shell may have afterwards encountered. Yet one surgeon whose operative mortality of laryngectomy is 36 per cent. feeds his patient on raw egg, milk and sherry wine, mixed by the cook. By this it is not meant that his high death-rate is due to this,

but simply to show what attention to detail is necessary to limit mortality.

Technique of radical laryngeal operations.—Time forbids more than a brief allusion to this all-important subject. No claim is made as to great originality in the technique of either the operations or the after-care. The technique has been culled from various sources, modified and elaborated, and carried out with great attention to detail. For this credit is due to my assistant, Dr. Ellen J. Patterson, whose aid has been invaluable in bringing the detail to the approximate perfection reached in the later operations.

(1) *Local preparation by the dentist.*—All dead teeth that show the least signs of surrounding suppurative processes and all dead roots are extracted, and all carious cavities are filled. This precedes the operation by as long an interval as necessary for healing, if extraction has been done, the teeth in the interval being cleaned with a brush after each meal and the mouth rinsed with 1 in 500 carbolic solution every three hours for a number of days. An active pyorrhœa alveolaris is an absolute contra-indication to laryngectomy. Oral sepsis is a source of disaster.

Latent infections about bridge work are searched for and eradicated. In sum, the mouth is got into the nearest possible approach to asepsis. The nose is let alone. If purulent nasal discharge is passing into the throat, the case is not favourable for operation, and treatment for the limited time available is not likely to cure it.

(2) General preparation of the patient by bath, purgative, and enema, as for any operation.

No food after the light supper of the night before. If operating in the afternoon a cup of black coffee at 7 a.m. is permitted.

(3) *Assistants.*—In addition to the anæsthetist there is one assistant whose exclusive duty it is to see that the patient at all times gets enough air, and to institute artificial respiration if need be. In my later cases the sphygmomanometer has been used also, and is of service. Two assistants, one to hold retractors, the other for sponging and hæmostasis, besides the nurse. With this corps, all trained in tracheal work, a death on the table is almost an impossibility with a light anæsthesia.

(4) Anæsthesia, preferably by chloroform, must be partial. The tracheal cough reflex must never for a moment be abolished. It is the greatest safeguard against inspiration pneumonia. The laryngeal cough reflex is abolished by the local application of a

20 per cent. cocaine solution, which has been sterilised, not by boiling, but by the addition of 1 per cent. of carbolic acid. This cocaine also blocks reflex cardiac inhibition and renders partial anæsthesia safe. After the start anæsthesia is a secondary matter, and the patient is often completely out. This makes the surgeon's work harder and his mortality records less. In my later cases I have added adrenalin to the cocaine solution, not to forestall hæmorrhage, but to render the outline of the growth more distinct, as suggested by Mr. Butlin.

The chloroform is administered, first with an Esmarch inhaler, later, after the air-passages are opened, it is continued with a gauze sponge held in a hæmostat over the wound or over the tracheal cannula, as the case may be. In previously tracheotomised cases the sponge is used from the start. The Trendelenburg inhaling tube is a needless complication.

I place not only the anæsthetist, but everybody, including myself, under the orders of one physician, whose sole duty it is to watch the condition of the patient. Every pulse beat and every breath is watched, and either anæsthetic or operative manipulation is stopped promptly at command before the danger signal in any of its many forms is reached. It is impossible for the operator or his assistant to do this. Still more dangerous is it to place upon the anæsthetist this duty. Herein lies one of the many differences between these operations and, for instance, abdominal work. In the latter the anæsthetist has full charge of the patient's head and neck, with its arteries, its colour, and its reflex indices. How different in laryngectomy! The anæsthetic is inhaled intermittently through the neck wound; the balance of the neck and the entire face and chest are covered with wet towels. The number of persons around the patient's head prevents the anæsthetist doing more than intermittently pushing an arm through the crowd with his chloroform-wetted gauze sponge held in a hæmostat.

(5) *Posture*.—I have tried the Trendelenburg tampon cannula and abandoned it. Hahn's and Gerster's cannulæ I have never used. Instead, the patient is put in the combined Trendelenburg-Rose position, which not only prevents the blood and secretions flowing into the lungs, but forestalls shock by increasing the cerebral blood-supply.

The posture differs slightly from the Trendelenburg in that the shoulders are not supported. The patient is hung by his knees; the legs, flexed at the knee, are strapped to the dropped foot-board, which is all that keeps the patient from sliding clear off the

incline. The head is dropped over the break when the head board is dropped at the moment of incision.

If the table be of the proper length, as the one I designed, no sandbag is needed. The table of the abdominal surgeon is too long in its main top portion, requiring more or less of a sandbag to throw the neck up prominently. The larger the sandbag, the less steep the incline of the trachea, which incline I rely upon, with the aid of an active cough reflex, to keep blood, secretions, or pus out of the lungs in all tracheal and throat surgery. As to a possible argument against this position that in these old patients the viscera dangerously crowd the diaphragm, lungs, and heart, I would answer that in a patient so feeble no operation at all is justifiable.

Illumination by an electric headlight is essential for rapid, careful, thorough work.

Operation.—In regard to thyrotomy, I have nothing to add to the operation as advocated by Sir Felix Semon and Mr. Butlin, save as mentioned above under "posture," and also as to the use of the curette.

In laryngectomy three different plans have been followed: the method of Glück, working from above downward, severing the trachea last; the method proposed by Keen without even temporary tracheotomy, the trachea being severed and stitched to the skin, as the first step after baring the trachea and larynx; and the method with preliminary tracheotomy done a week, or preferably more, before the principal operation. For reasons already given, the larynx is quickly cut clear of the œsophagus with a sharp knife, without tugging. I have never found a transverse incision necessary if no more than the larynx was to be extirpated. I always remove the epiglottis, whether involved or not.

In all cases the trachea is stitched to the skin as advocated by Cohen—preferably to a buttonhole if possible. The anterior wall of the œsophagus is stitched to the tissues about the hyoid bone, the epiglottis being removed. These stitches are of fine "ten-day" chromicised catgut and closely placed with the greatest care to guard against leakage into the wound, which is closed by buried and superficial stitches to obtain primary union to as great an extent as possible, and properly to support the œsophagus in place. Where, as in one case, the anterior wall of the œsophagus has to be extensively resected, the walls are stitched laterally to the skin, making an opening in the skin, to be later closed by a plastic operation if desired.

For reasons which time forbids entering upon here I prefer a

preliminary tracheotomy. One condition often makes it imperative. If there is the slightest stenosis the patient will take a general anæsthetic badly. Respiratory arrest will be synchronous with unconsciousness. Preliminary tracheotomy can be done painlessly by Schleich's local infiltration—an excellent method which I adopted reluctantly after much urging by Dr. John W. Boyce, who thus first locally anæsthetised three cases for me.

When a tracheotomy for stenosis has been required, I have always made them high, not low, as the text-books advise. They should, I think, be as high as possible and yet avoid entering the infiltrated area. I have done this high operation with a threefold object:

First, it allows me to take an adequate specimen, if I so desire; secondly, it enables inspection of the growth from below, which often yields valuable information; thirdly—and, perhaps, most important—it leaves the greatest extent of trachea available for mobilisation, which is invaluable in the event of a later laryngectomy, when it will be desirable to stitch the trachea to a button-hole in the skin.

POST-OPERATIVE CARE.

Most imperative are the orders against the administration of morphine or any other sedative that lessens the activity of the cough reflex, which is the watch-dog of the lungs. For the same reason the patient must be completely out of the anæsthesia before the end of the operation, so there will be no post-anæsthetic sleep. Two special nurses, long trained in tracheal work, alternate duty so that the patient never draws an unwatched breath. Either my assistant or myself are always within a few minutes' call.

The foot of the bed is elevated on chairs for the first twelve hours, and after that a less elevation maintained only during sleep suffices for three days. After the first twelve hours the bed is lowered, in a few hours a pillow is given, then more pillows, then a back rest, so that the patient is sitting up in bed at the end of twenty-four hours. On the second day he is sitting in a reclining chair, and the third day may move about a little. Here again is seen the absolute necessity of a strong general condition. Syncope would be frequent and possibly fatal were a feeble man subjected to this while being starved.

Dressings.—In this matter I differ most radically from other workers. In laryngectomies, thyrotomies, and tracheotomies the

dressings are changed every three hours. They are invariably sterile gauze wrung out of mercuric bichloride 1 in 10,000.

After thyrotomy no tracheal cannula is inserted, but it is in readiness, sterilised for immediate insertion if need arise. The thyroid cartilage is not stitched, nor the outer wound, except one or two stitches at the upper part if it gape too much. The wound is kept open until it heals from the bottom. This invariable rule (to secure union of the divided cartilages first) prevents exuberant granulations forming on the internal aspect of the wound within the laryngeal or tracheal lumen. Dressings wrung out of bichloride solution, replaced every three hours, absorb secretions and filter the air which leaks through.

Should a tracheal cannula have to be inserted it is managed as after laryngectomy.

After laryngectomy the wound above the tracheal cannula is drained by a small wick of gauze inserted (not firmly) above the cannula and renewed every three hours. The gauze around the cannula is renewed as often as soiled, as is also the filter piece of gauze over the orifice. All of these are sterile gauze wrung out of weak mercuric bichloride solution.

The inner cannula is dispensed with and the outer cannula is replaced by a fresh one every three hours. All of these manipulations are carried out with the same strict technique as obtains in a perfect operating-room. If any one doubts the necessity of the frequent dressings or cannula changes, let him smell a dressing or a cannula that has been *in situ* for a day. I never pack a laryngectomy wound, as it prevents primary union which is obtainable in more or less of the wound.

The mouth and teeth are carefully swabbed every half-hour with a very cold solution of boric acid in mentholated water. This is agreeable, and allays thirst. The patient is turned upon his face frequently (without pillow) to allow pus and secretions from the pharyngeal wound to escape, as secretion is impossible after laryngectomy.

Food as well as water must be sterilised by the nurse, whose technique equals that of the operating-room nurse. Milk, eggs, everything, must not only be sterilised, but must be sterile when given to the patient with sterile utensils.

After thyrotomy almost all my patients have been able within a day or two to swallow normally. A few have been obliged for a few days to swallow "up hill" as after an intubation—that is, supine, without a pillow, and with the foot of the bed elevated on

chairs, and the sterile liquid food being taken through a bent glass tube.

After laryngectomy no food or water is given by mouth for five days. Unquestionably, thirst can be allowed by enemata. As to the value of nutrient enemata, however, I have always been an absolute sceptic until my last case of laryngectomy, in which Dr. Jacob Wolf, by a system of rectal feeding, succeeded in preventing any loss of weight during the five days that no food was permitted to pass the mouth.

After five days the patient is allowed to swallow sterile water and sterile fluid food. If it leaks through into the wound the stomach-tube is used. After the eighth day, if leakage persists, the stomach-tube is abandoned, and the leak is "corked" from below with a small tight tampon of gauze, placed before and removed after eating. Semi-solids are permitted after two weeks and general diet after three weeks.

During the first few days after laryngectomy vomiting must be avoided at all hazards, lest stitches be dragged upon and primary union prevented. Hence the first feeding must be in very small quantities, both as to total amount at one feeding and as to quantity at each swallow. For the same reason all feeding tubes are to be avoided.

Pre-operative microscopy is of undoubted aid to diagnosis if an adequate specimen can be removed. Late in the disease such a specimen can always be obtained, but in those early cases in which we most desire help it is frequently impossible by the old indirect endolaryngeal methods to bring away a sufficient depth of tissue to afford the microscopist a basis for a dependable opinion. For this reason, in cases of doubt, the writer has always advised exploratory thyrotomy with complete removal of the growth, which can then be examined in its entirety. If it prove upon the then reliable radical microscopical examination to be malignant, and if more radical removal be deemed advisable, it can be done immediately. If it prove benign, it requires removal; the patient is well rid of it, and with equal or greater safety to his voice as compared to indirect endolaryngeal removal. In some of my later cases, however, I have used a tracheoscope, modelled after Killian's, but with improved illuminator, for the removal of a specimen. Usually a general anæsthetic is required, so that it is not so satisfactory in cases with much stenosis. An attempt in such cases usually ends up in a stabbing tracheotomy. In this class, however, the old method is feasible, as stenosis comes late in the disease. When a

patient has come with severe stenosis requiring tracheotomy, I have taken a specimen through the tracheotomy wound.

In one of the negatively reported cases the clinical appearances also were negative, both before and at thyrotomy, so that the sound perineoplastic tissues were spared a wide removal. Before the wound had healed, however, Dr. Duffy reported the case, upon examination of the entire growth, undoubtedly an epithelioma. The external wound was at once opened, and a wide area around the intra-laryngeal wound was removed. There was no recurrence.

Of twenty cases of malignant laryngeal disease operated upon by me negative preliminary microscopical reports of removed fragments were made in fourteen. That this was due, not to the pathologist's error, but to the inadequate specimens, goes without saying. In each of the fourteen cases operation, in the face of the microscopist's negative report, was advised, on the strength of the age of the patient and the laryngoscopic appearances, coupled with failure of benefit from mercurial inunctions and 180 gr. daily of potassium iodide continued for three weeks. Pachydermia, syphiloma, and syphilitic fibrosis can be to-day eliminated from the diagnosis without difficulty. Having excluded these, there is almost no disease of the larynx (that the laryngologist is likely to confuse with a malignant neoplasm) but can be benefited by thyrotomy and inclusive measures.

Benign neoplasms in adults require removal anyway, even if they be not considered precancerous conditions, and some of them as papillomata, certainly require wide removal to prevent recurrence. This wide removal enables the pathologist to give a trustworthy opinion, which an endolaryngeally-removed fragment cannot. Laryngeal tuberculoma is now too frequently advantageously treated surgically to cause any one to regret thyrotomising a tuberculous larynx. The same may be said of lupus. Of course, in the event of macroscopically evident extrinsic malignancy being uncovered at this exploratory thyrotomy immediate laryngectomy is the course to pursue. In the event of finding a benign condition, such as [a paralysis associated with a laryngitis, or an everted ventricle, no harm will have been done, and the good discovery will have been ample compensation.

Before the work of Sir Felix Semon and Mr. Butlin demonstrated the low mortality and good vocal results following thyrotomy, there might have been some justification for hesitancy in opening the larynx until after the endolaryngeally removed speci-

men had been reported malignant. But in view of the work of the authorities just referred to, and that of others, as well as the little I have been able to add, I venture to assert that the day is not far distant when almost every doubtful case (in an adult) of laryngeal neoplasm that does not yield to antisiphilitic treatment will be excised by thyrotomy, and that the subsequent management of the case will be determined by the entirely trustworthy results of the microscopic examination of the extirpated growth and its bed of normal tissue. In no case have I regretted adherence to this rule.

In the state of our knowledge at a time when it was thought that to open the larynx was to ruin the voice such a procedure was inadmissible in possible benignity.

Bearing on this point I beg to refer, in passing, to twenty-four cases in which for benign conditions (stenosis following typhoid fever, syphilis, tuberculosis, and traumatism) I exenterated the larynx down to a bare perichondrium. In every one of these cases (nineteen) that lived over one year a good useful voice resulted. Details are out of place here, and these cases are only referred to to emphasise the (at the present day) needlessness, in many cases, of a preliminary microscopical examination of an endolaryngeally removed specimen. Of the occasional harmfulness of this removal I feel convinced, though in only two instances have I been able to attribute the early fatality to the removal of a specimen. In one of these the consent to a radical operation was withdrawn, and in the other I had unfortunately neglected to obtain such consent prior to the taking of the specimen. In both cases rapid local spread required tracheotomy in about one and two months respectively. In one the cervical lymphatics became rapidly involved and prompt extension to the introitus œsophagi superioris required gastrostomy, which was but the beginning of the end, death following six months after the taking of the fragment. In the other case general carcinomatosis developed, followed by death in four months after the removal of the specimen. In both instances the entire growth at the time of the fragmentary removal did not much exceed a cubic centimetre in size. It is not impossible that had a radical operation followed immediately, metastasis would not have occurred. Further, there are degrees of malignancy, or, what may be the same thing, degrees of vulnerability, which may account for the rapid spread in these cases, as it does for a varying duration of freedom from recurrence after radical operation.

My conviction is that we subject our patient to some risk in the removal of a specimen a week or more before radical operation.

These views have been so often and so ably expounded by one of America's foremost laryngologists, Dr. John N. Mackenzie, that it is unnecessary for me to disclaim originality.

As to the naked-eye diagnosis of malignant disease of the larynx, I have come to rely greatly upon it in a certain class of cases. Within the present year Dr. Emil Meyer promptly pronounced a case of mine malignant. In another instance Dr. Francke H. Bosworth concurred with me as to malignancy on the first examination. I removed the larynx in both instances, and the histologic examination by Dr. Jonathan Wright proved these eminent laryngologists correct. In both instances a report (not by Dr. Wright) had been negative on an inadequate specimen removed, in one instance endolaryngeally and in the other through the tracheotomy wound. In some cases we must, I think, remove the larynx upon a naked-eye diagnosis.

In these cases no doubt could exist. In other cases, especially where there is a possibility of mixed lesions, mistakes are apt to occur. I have reported two such cases—one of syphilis and epithelioma, and one in which syphilis, epithelioma, and tuberculosis all three existed in the same case at the same time in the form of a mixed lesion. In another case, seen with Dr. J. A. Lichty, I made a diagnosis of laryngeal syphiloma. Orbital and cerebral gummata, with hemiplegia, exophthalmos, and diplopia, had yielded promptly to antisiphilitic treatment. An apparent paralysis of the left vocal cord developed suddenly about the same time as the hemiplegia. That this was really a fixation was evident later when infiltration became evident on that side of the larynx around the arytenoid and aryepiglottic fold. As these conditions were yielding rapidly to specific treatment, I felt so confident of their specific nature that I did not take a specimen. The case later fell into the hands of Dr. F. Whitehill Hinkel of Buffalo, and proved to be malignant, as Dr. Lichty had suspected.

The yielding to specific treatment indicated that the lesion was mixed, as the improvement was greater (healing of ulceration) than that slight improvement we so often see in malignancy after the iodides.

It will be observed that errors in these cases were of omission, and, I think, do not render my position untenable as to cases that do not yield to antisiphilitic treatment.

SUMMARY.

Of my 49 cases of malignant laryngeal disease, 29 were deemed unfit for operation, 20 were radically operated, making 15 thyrotomies and 8 laryngectomies, 3 patients undergoing both operations. There were no deaths within thirty days of operation.

Of the 15 thyrotomies 1 was alive and free from recurrence after six years, 1 four years, 2 three years, 1 two years, and 1 three months; 2 died of general diseases, and 4 were lost track of after about one year, and 3 died of recurrence, in spite of subsequent laryngectomy. Omitting the recent case, of 14 thyrotomies 11 (78 per cent.) were well at the end of one year, relatively cured.

Of 8 laryngectomies 3 were hemilaryngectomies, followed by recurrence and the total operation. (Three other hemilaryngectomies without recurrence were included under "thyrotomy.") Of the 8 laryngectomies 1 lived seven years, dying of "cancer of the stomach" (details unknown); 1 lived three years without recurrence, dying of cerebral hæmorrhage, and 1 eight months, dying of alcoholism; 3 cases had recurrence within a year, 1 apparent cure was lost to observation after one year, and 1 is too recent (3 months) to record. Omitting the recent case, there were 3 (42 per cent.) apparent cures well at the end of one year out of 7 cases, but no absolute cures of malignancy. On what would be the efficiency of laryngectomy, if done in intrinsic disease of limited extent, my work throws no light, as my laryngectomies were all for extrinsic disease.

CONCLUSIONS.

(1) Thyrotomy is the operation of election for early intrinsic laryngeal malignant disease. Until a therapeutic cure shall have been discovered, surgery cannot hope for better results than this operation yields, if done only in intrinsic disease of very limited extent.

(2) Laryngectomy is advisable in all cases extrinsic by origin or extension, provided the patient is in vigorous health.

(3) There is no such thing as absolute ultimate cure of malignancy. Recurrence may take place after many years. For the purpose of comparing the relative efficiency of operative methods, freedom from recurrence for one year indicates adequate removal. Varying periods thereafter indicate varying degrees of malignancy or varying degrees of vulnerability, not repullulation of

the primary process from operative inefficacy. If cancer can reappear in the stomach seven years after removal of cancer of the larynx there is no reason why it should not reappear in the neck or the scar, where it would be called a "recurrence" rather than a "reinfection."

(4) No operation other than a palliative one is justifiable in a patient of feeble general health, nor in one in good condition if he have metastasis or organic disease. Hence, in only a few cases is operation justifiable at the time they come under observation.

(5) If this rule be adhered to in the selection of the case, and a careful technique, pre-operative and post-operative as well as operative, the mortality of laryngectomy can be reduced to a point where any surgeon will not hesitate to advise it. The mortality must always be considerable. It is not possible to reduce it to *nil*, and it is only so in this series by reason of the small number of cases.

(6) One of the greatest factors in the production of operative shock in laryngectomy, as shown by the sphygmomanometer, is the tugging at the œsophagus while the larynx is being freed. This can be minimised by clean cutting without tugging or dry dissection, and by a minimum of displacement of the œsophagus. Cocaine assists.

(7) Shock, sepsis, and pneumonia can be minimised by perfection of technique, and should they occur the chances of recovery are good if the patient be in good general condition.

(8) Routine surgery and routine after-care invite mortality.

(9) Pre-operative microscopy is often of aid in diagnosis, but it involves some risk of metastasis. It is better in any case of doubtful laryngeal neoplasm deemed operable to remove by thyrotomy the entire growth with its bed of normal tissue, and let the subsequent management of the case be determined by the then dependable report of the histological examination. When desired, a specimen may be taken in some cases by the self-illuminating tracheoscope, or through the tracheotomy wound.

(10) While the surgery of malignant disease is discouraging, it need be so, in the larynx, only in default of an early diagnosis.

DISCUSSION.

Dr. HERBERT TILLEY (London) referred to the importance of having teeth and mouth thoroughly cleansed for a few days previous to opera-

tion: in this way the danger of septic pneumonia might be minimised. Cocaine anæsthesia of the trachea to relieve the reflex coughing after opening the trachea was unwise, because it destroyed a valuable sign of tracheal irritation which might be due to the flowing of blood into the lungs. The thyroid cartilage might be drawn together by a stitch which did not enter the lumen of the larynx: if it did enter, granulations might form in the anterior angle, which might look like recurrence of the growth. The skin wound was to be sewn up in the upper three-quarters of its extent. Hæmorrhage from the posterior end of the cut cord might often be checked by the application of Whitehead's varnish. It was an important point in after-treatment to see that the patient changed his position every two hours or so, in order that the lungs might be equally aerated.

Dr. J. A. STUCKY (Lexington, Kentucky) said that in all major operations upon the larynx, mouth, or accessory sinuses the question of maintaining complete anæsthesia was a most important and often serious one. The production of ether narcosis by rectum had not been referred to. This was an old method recently resurrected and perfected by Frank Cunningham, of Boston, and used by himself in four cases of the complete Killian operation, with most satisfactory results to patients and operator. The advantages in the method were the unobstructed operation field, whereby the danger of infection by anæsthesia apparatus was diminished, a small amount of ether was used, there was a rapid recovery from anæsthesia, and the absence of nausea and of the usual post-operative effects of prolonged anæsthesia. The method was described in full in the *Boston Medical and Surgical Journal*, and by himself in a paper recently read before the American Laryngological, Rhinological, and Otological Association at Kansas City, in June, 1906.

Dr. STCLAIR THOMSON (London) complimented Dr. Jackson on his work, which he had followed for some years. He was almost in complete accord with all Dr. Jackson's views and methods, and would, therefore, limit his remarks to a few questions. Had Dr. Jackson ever performed thyrotomy under cocaine? Did he still use Hahn's tube? Did he leave the trachea wound open? Dr. StClair Thomson saw no gain in closing the wound completely, and it was a safety valve both for bringing up sputum and for testing swallowing powers. Dr. Thomson allowed his patients to sip water within twelve hours, and to get out of bed in two or three days. Finally, he asked Dr. Jackson whether he had any experience of mental changes in his patients after laryngo-fissure or laryngectomy—melancholia, mania, or suicidal impulse.

The PRESIDENT congratulated Dr. Chevalier Jackson on his brilliant results, and agreed as to the importance of the selection of cases, the mental element being very important. He (the President) had done two total extirpations; both patients were of cheerful and courageous disposition, otherwise he was sure they would not have got through the after-treatment as they did. One (sarcoma) lived for about a year; the other (extensive intrinsic carcinoma) was still alive and free from any sign of recurrence a year and a half after the operation.

REPLY.

Dr. CHEVALIER JACKSON, in reply, said that he thought Dr. StClair Thomson's suggestion to do thyrotomy under local anæsthesia an excellent one. Though he had never tried it for thyrotomy, it had proved perfectly

satisfactory for tracheotomy. He considered it feasible to do a total laryngectomy thus also, but would hesitate to advise it lest some one should be tempted to use it on a patient too feeble to stand a general anaesthetic; if too feeble for the latter he would never survive the operation. He always had faith in anything Dr. Stucky advocated, and therefore felt inclined to try rectal anaesthesia. In regard to the granulation-tissue anteriorly in the larynx after thyrotomy, warned against by Dr. Herbert Tilley, he had twice committed the blunder of removing it. It had not occurred in his later cases because he did not sew up the wound in the cartilage, and because he packed the wound until the divided cartilage had been firmly bound together by inflammatory tissue. It was not his custom to insert a cannula after thyrotomy, though one was sterilised and ready to hand for immediate insertion if needed. He was glad to hear the importance of preliminary local preparation by the dentist emphasised. In regard to mental trouble, he had to confess that one patient had melancholia—possibly due in part to the feeling that he was different from his fellows in breathing through his neck, and partly to the slow development of buccal voice, which he would not systematically practise.

THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

At the annual meeting of this Society, held on Monday, December 3, the following were elected as Officers and Members of Council for the ensuing Session 1906—1907. *President*: A. E. Cumberbatch, F.R.C.S.; *Vice-Presidents*: A. H. Cheatle, F.R.C.S., John Middlemass Hunt, M.B., A. Brown Kelly, M.D., Richard Lake, F.R.C.S.; *Honorary Treasurer*: Edward Law, M.D.; *Honorary Editor of "Transactions"*: Walter Jobson Horne, M.D.; *Honorary Librarian*: L. A. Lawrence, F.R.C.S.; *Council*: F. W. Bennett, M.D., C. H. Fagge, F.R.C.S., Joseph Nelson, M.D., William Permewan, M.D., Hunter Tod, F.R.C.S.; *Honorary Secretaries*: Henry Seeker Walker, F.R.C.S., E. B. Waggett, M.B.

At the annual dinner held on the evening of the same day the President, Mr. A. E. Cumberbatch, occupied the chair. After the usual loyal toasts Dr. Frederick Roberts proposed "The Otological Society," coupled with the name of the President, who responded. Mr. Cresswell Baber proposed "The Guests." The toast was responded to by Sir James Reid.

Abstracts.

LARYNX.

Fallas, A.—*A Case of Laryngeal Stenosis.* "La Presse Oto-Laryngologique Belge," April, 1906.

A long account of a case of acute œdematous laryngitis, with the formation of an abscess, accompanied by severe dyspnœa, which made tracheotomy necessary. The inflammation was followed by gradually increasing stenosis of the larynx, which did not yield to persevering treatment by means of dilators.

The improvement after laryngo-fissure was very partial, and further measures were in contemplation when the patient was lost sight of.

The author discusses at length the etiology and treatment of this obstinate condition, and concludes with a bibliography.

Chichele Nourse.

Henrici (Aachen).—*The Indications for "Curative" Tracheotomy in Laryngeal Tuberculosis.* "Archiv für Laryngol.," vol. xviii, Part I, 1906.

The author records four cases of laryngeal phthisis which were completely cured after having tracheotomy performed, not to relieve dyspnœa, but simply to put the larynx at rest. All were in children from eleven to thirteen years of age, in whom the laryngeal disease appeared to be primary, as there was no evident lung disease to be detected in any of them. The permanent nature of the healing is shown by the fact that it remained complete at periods of nine months, two years, three years, and five years after the tracheotomy.

The three indications for "curative" tracheotomy which the writer deduces from his experience are:

(1) Youthful age of the patient; this he thinks may be regarded as extending throughout the whole period of bodily development up to the age of twenty.

(2) The absence of, or only very slight, disease in the lungs.

(3) A relatively benign form of laryngeal disease, a tendency to tumour-formation and infiltration without much ulceration.

In all the four cases the disease had continued to progress, notwithstanding ordinary endo-laryngeal treatment, before tracheotomy was performed.

Middlemass Hunt.

Boenninghaus, G. (Breslau).—*On a Peculiar Condition of Sensory Irritability of the Superior and Inferior Laryngeal Nerves.* "Archiv für Laryngol.," vol. xviii, Part II, 1906.

During the past seven years the author has observed a distinct group of cases characterised by the following symptoms: pain in the throat, varying greatly in intensity, sometimes radiating towards the ear or towards the chest, increased on swallowing saliva (this symptom almost pathognomonic), rarely made worse by swallowing food or by loud speaking, and always attended by tenderness on pressure at certain points in the course of the superior or inferior laryngeal nerves. There are four of

these "pressure points," an upper and lower on each side, and one or more of them may be found to be tender. The upper are situated on each side of the thyro-hyoid membrane, where the superior laryngeal nerve passes through the membrane; the lower are close to each side of the trachea and just above or behind the clavicle. In nearly every case the patients suffered from chronic pharyngitis and laryngitis, and the pain usually commenced during an acute exacerbation and continued for months if its true nature was not recognised. In none of the cases was there any evidence of hysteria.

The diagnosis is based on the absence of any local condition in the pharynx or larynx to account for the pain, and on the discovery of one or more of the tender spots mentioned above. The following directions are given for discovering these tender spots: For the upper, stand behind the patient, whose head is bent forwards, place the right thumb on the thyro-hyoid space and the left forefinger on the opposite side, then make short, energetic pressure on both sides at the same moment. This is, of course, disagreeable to any patient, but what is characteristic of this affection is the marked tenderness of one side when equal pressure is applied to both. To discover the lower the thumbs should be placed at the back of the neck on each side, while the tips of the middle and forefingers are pressed deeply in at each side of the trachea and just above the clavicles, till one feels the bodies of the vertebræ. Equal pressure should be applied on both sides and the amount of tenderness of the two sides compared.

The author regards the affection as a neuritis of the superior and inferior laryngeal nerves, secondary to an inflammation of the mucous membrane of the larynx and trachea. Of course, he holds that the recurrent is a mixed nerve and thinks his observations furnish another proof that the nerve contains sensory fibres.

Treatment is very satisfactory, as external massage appears to be always successful. Details of eighty-two cases are given.

Middlemass Hunt.

E.A.R.

Eagleton, W. P. (Newark, N. J.)—*Circulatory Disturbances following Ligation of the Internal Jugular Vein in Sinus Thrombosis, with Report of a Case.* "Arch. of Otol.," vol. xxxv, No. 2.

The case was a chronic one; the typical symptoms of otitic pyæmia supervened. Blood examination revealed malarial plasmodia, but temperature rose again, in spite of malaria. The mastoid, on operation, was normal; no bleeding came from the diploetic veins. The sinus was exposed at the "knee," and looked normal, but was blackened lower down, and a drop of pus oozed from the lowest part of the wall. The jugular was ligated, and this was immediately followed by profuse hæmorrhage from the upper wound, both soft parts and bone, thought to come chiefly from below. Firm plugging was necessary. Double optic neuritis, not previously present, supervened, and in a few days there was a general septic condition, the veins over the whole of the scalp and the upper part of the chest being very much distended. The patient lived for two months, in the course of which he had a cerebral hernia, symptoms of cerebellar abscess, vomiting, vertigo, loss of co-ordination on left side of both arm and leg. The cerebellum was twice explored, but nothing was

found. *Post mortem* the left lateral, the torcular, the inner one fourth of the right, nearly the whole of the superior longitudinal sinuses, were thrombosed. The cavernous and the petrosals were normal. There was rather extensive meningitis. The writer considers most of the conditions either directly or indirectly attributable to the sudden disturbances in the cranial circulation, produced by the ligation of the jugular. To prevent a disturbance of the return circulation he recommends the following means:

First, before ligating the jugular, by making as large an opening as possible in the sinus wall, and beginning this opening as far as possible down towards the bulb, without attempting to remove the clot, thus avoiding the possibility of mistaking a parietal for an occluding thrombus, and at the same time reducing to a minimum the probability of disseminating the thrombus.

Second, if the thrombus is, as in the case here reported, situated so low that this is impossible, then the application of a temporary clamp, such as the Crile clamp for temporary compression of the carotid, and if then there is no extra bleeding from the diploetic and other small veins, it is fair to infer that the circulation has in no ways been disturbed.

Third, by not injuring the external jugular in ligating.

Fourth, by ligating above the entrance of the facial whenever there is not a positive indication for a lower site being chosen.

Dundas Grant.

REVIEW.

Polypus of the Nose. By EUGENE S. YONGE, M.D. 174 pp. London and Manchester: Sherratt and Hughes. 1906.

The etiology and pathology of nasal polypus have given rise to an almost unlimited amount of discussion, the most important statements on the subject being familiar to our readers. Dr. Eugene Yonge reviews them with great fairness and judgment, and rules them out of court so far as a certain number of cases, at least, is concerned. He considers that two elements are necessary, a sealing up of the orifice of a gland and an increase in the glandular secretion. These are produced by local inflammatory processes and some irritation stimulating the secretion. He supports his views by a most logical marshalling of the various facts, and confirms it by the result of actual experiment on the lower animal. The cat, as being subject to polypus, was selected, and the result of simultaneous excitement of inflammation and stimulation of the glands was the development of a growth like a small polypus on the maxillo-turbinal. Neither of the factors was sufficient alone to produce this effect. The whole process is so clearly described that it almost carries conviction captive. In any event it affords ample and satisfactory explanation of the development of polypi. We are bound to ask ourselves whether it affords the explanation of *all* of them. The exposition so far is most convincing, and we hope that the writer will continue his valuable experiments so as to establish his views on a firmer foundation. His instructions for treatment are thoroughly sound, and the indications for the selection of the methods of treatment suitable respectively for various cases are very judiciously set forth, but as

the methods differ in no material way from those familiar to all modern rhinologists, we are at a loss to account for this able and well-informed worker applying to any of them the terms "new and simplified." The monograph is well worth reading as an example of able reasoning and, further, as a useful, practical guide to the treatment of a common and troublesome malady.

THERAPEUTIC PREPARATIONS.

BURROUGHS WELLCOME & Co., London, Sydney, and Cape Town.

"Soloid" Eosin-Azur for Giemsa staining with one solution. Recent work by Schaudinn, Metchnikoff, and others has directed attention to the *Spirochaete pallida* as the probable causal organism of syphilis. Since cultures of this spirochaete have not yet been obtained by laboratory methods, its identification has largely rested upon the suitability of the staining reagents employed.

Prominence has been given to Giemsa's method which has already been recommended for staining malarial blood. The method requires a mixture of aqueous solution of eosin and of pure methylene azul. The necessity of preparing two solutions is a disadvantage which has been overcome by the use of "Soloid" Eosin-Azur for Giemsa staining with one solution. With the "Soloid" product the process is carried out easily and conveniently.

To prepare the solution, dissolve one "Soloid" product in 5 c.c. of pure methyl alcohol. A few drops are run on to the film and allowed to remain one or two minutes. Then double the volume of distilled water is dropped on to the film. After another five minutes' staining the film may be washed in distilled water, dried in air, and mounted in xylol balsam. Nuclear and malarial bodies stain an intense red or violet colour, while the *Spirochaete pallida* will be stained a paler reddish purple.

"Soloid" Eosin-Azur, 0.015 gm. (gr. 0.231) is issued in tubes of six.

BOOKS RECEIVED.

Clarence John Blake, M.D., and Henry Ottridge Reik, M.D. *Operative Otology, Surgical Pathology, and Treatment of Diseases of the Ear.* London: Sidney Appleton. 1906. 15s. net.

In the Van; or, *The Builders*, by Price-Brown (Eric Bohn), author of "How Hartman Won," etc. Illustrated by F. H. Brigden, O.S.A. Toronto: McLeod and Allen.

Charles A. Parker, F.R.C.S. Edin. *A Guide to the Diseases of the Nose and Throat and their Treatment.* With 255 illustrations. London: Edward Arnold, 41 and 43, Maddox Street, Bond Street, W. 1906. 18s. net.

Eugene S. Yonge, M.D. Edin. *Polypus of the Nose.* Sherratt and Hughes, 34, Cross Street, Manchester; 60, Chandos Street, London, W.C. 1906. 2s. 6d. net.

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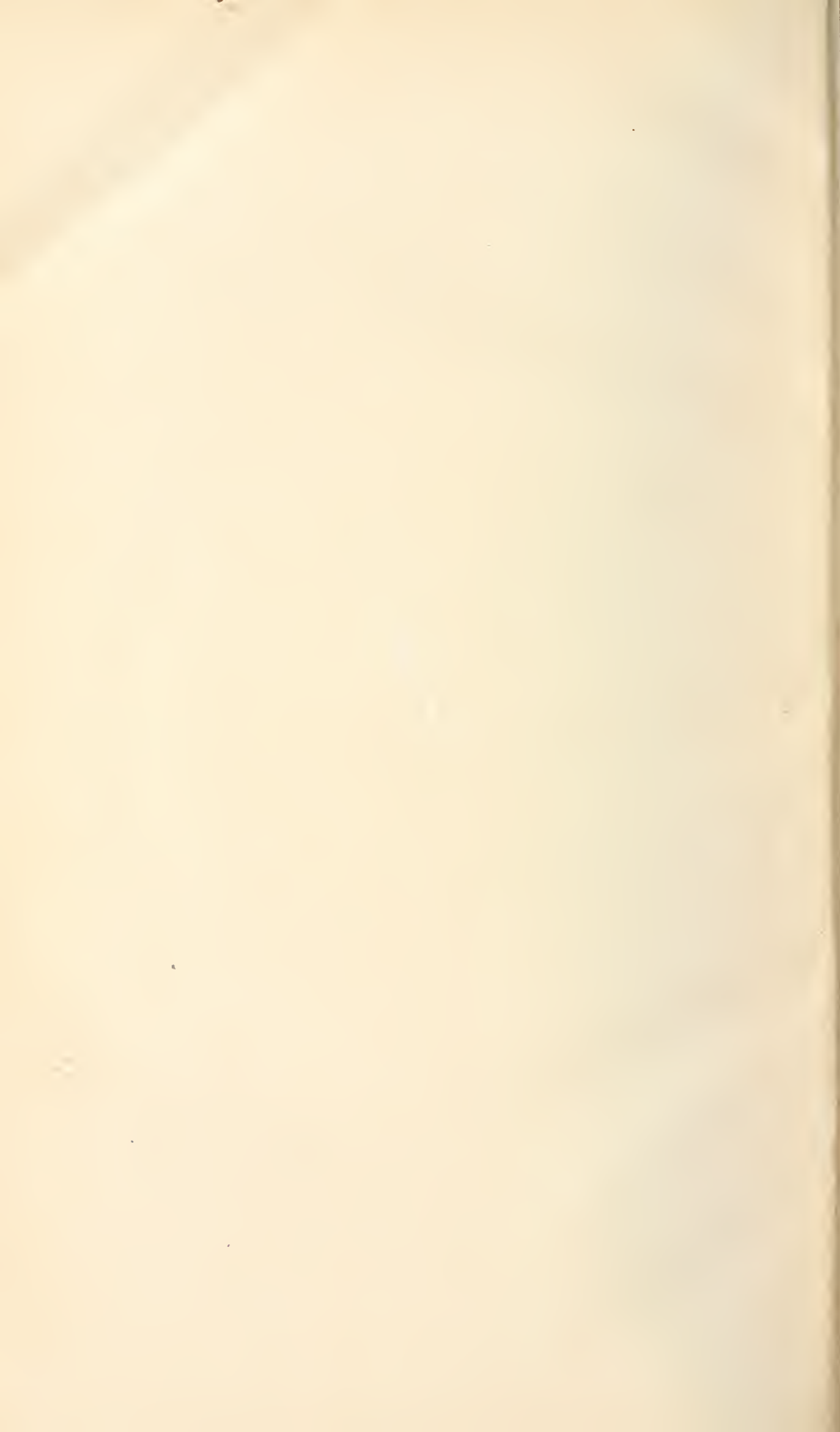
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